EXHIBIT A

EXHIBIT 2

REDACTED VERSION OF DOCUMENT

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HIGHLY CONFIDENTIAL
ATTORNEYS' EYES ONLY

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

SPACE DATA CORPORATION,

Plaintiff,

v.

ALPHABET INC., and GOOGLE LLC,

Defendants.

Case No. 5:16-cv-03260-BLF (NC)

PLAINTIFF SPACE DATA CORPORATION'S JULY 13, 2018 AMENDED RESPONSES TO DEFENDANT GOOGLE LLC'S INTERROGATORY NOS. 12, 15, 16, 17, 19, 20 & 23

Judge: Hon. Beth Labson Freeman
Date Filed: June 13, 2016
Trial Date: August 5, 2019

HIGHLY CONFIDENTIAL: ATTORNEYS' EYES ONLY

Space Data Corporation ("Space Data" or "Plaintiff"), hereby provides its amended responses (inclusive of objections) to Google LLC's ("Google" or "Defendant") Interrogatory No. 12, 15, 16, 17, 19, 20 and 23 (the "Interrogatories").[1]

Discovery is ongoing, and Space Data has not yet completed discovery in this action, and has not completed preparation for trial. All of the following responses to Defendant's discovery therefore are without prejudice to Space Data's right to produce evidence of any subsequently discovered facts or subsequently discovered documents. The information hereinafter set forth is true and correct to the best of Space Data's knowledge as of this date, and is subject to correction for inadvertent errors, mistakes or omissions.

GENERAL OBJECTIONS

1. All of Space Data's General Objections, and all of Space Data's Specific Objections to the Interrogatories, made in Space Data's prior responses that relate to the Interrogatories are incorporated herein by reference.

2. Space Data objects to the Interrogatories to the extent they are inconsistent with or purport to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties.

3. Space Data objects to the Interrogatories to the extent they seek description or identification of all or each fact, act, document, persons, communications, or other evidence or member of a category of information or thing concerning any subject matter. This language renders the Interrogatory vague, ambiguous, unintelligible, unduly broad, and uncertain. To the extent Space Data agrees to identify any information, it will conduct a reasonable investigation for relevant, responsive, non-duplicative, non-privileged information

[1] Google and Alphabet Inc. are collectively referred to as "Defendants."

and make reasonable identifications based on its investigation, as, we are sure, will Google.

4. Space Data objects to the Interrogatories to the extent they are vague, ambiguous, overly broad and unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence. Space Data expressly reserves all objections as to vagueness, ambiguity, unintelligibility, and overbreadth.

5. Nothing herein shall be construed as an admission by Space Data regarding the admissibility or relevance of any fact or document or of the truth or accuracy of any characterization contained in Google's discovery requests. Space Data expressly reserves all objections regarding the competency, relevancy, materiality, probative value, and admissibility of all information provided, documents produced and contents thereof.

6. Space Data objects to the Interrogatories to the extent that they are duplicative of other discovery to be produced in this case or seek documents and things which are more easily available through other, less burdensome means.

7. Space Data objects to the Interrogatories to the extent that they seek information, documents, or things that are not relevant to the subject matter of this action or to a claim or defense of any party and/or are not reasonably calculated to lead to the discovery of admissible evidence.

8. Space Data objects to the Interrogatories to the extent they include subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33.

9. Space Data objects to the Interrogatories to the extent they seek information that does not exist or that is otherwise outside of Space Data's possession, custody, or control.

10. Space Data objects to the Interrogatories to the extent they seek information that is already within the possession of Defendants or that is readily accessible to Defendants, as through public sources.

11. Space Data objects to the Interrogatories, and each of the requests,

instructions and definitions therein or incorporated therein, insofar as the Interrogatories and any request, instruction or definition seeks information or production of documents or things protected by the attorney-client privilege, protected by the work-product doctrine, immune as trial-preparation material, or protected by any other applicable privilege, immunity, rule or duty of confidentiality which precludes or limits the disclosures of such information. Such information shall not be provided in response to the Interrogatories and any inadvertent disclosures shall not be deemed a waiver of any privilege or related doctrine.

12. Space Data objects to the Interrogatories to the extent they seek information, documents or things that contain trade secret, confidential or proprietary information. Space Data will provide such information, documents or things only subject to the protection of the Stipulated Protective Order in this case (ECF 171).

13. Space Data objects to the Interrogatories to the extent they require Space Data to provide information or documents or things that are subject to a non-disclosure or confidentiality agreement or protective order with a third party, or a legal or regulatory or other government restriction, or that contain the trade secrets of or confidential or proprietary or sensitive information of a third party. To the extent Space Data identifies any such information, document or thing, it will abide by its confidentiality obligation that prevents disclosure and provide notice to Defendant of the nature of the information, document or thing and the confidentiality obligation that prevents disclosure. To the extent that Space Data is able to provide any such information, documents or things, it will only do so subject to the protection of the Stipulated Protective Order in this case (ECF 171).

14. Space Data objects to the Interrogatories to the extent they seek sensitive personal or private information that is otherwise confidential or protected by a person's right to privacy. If Space Data provides any such information, documents or things, it will do so subject to the protection of the Stipulated Protective Order in this case (ECF 171).

15. Space Data objects to the Interrogatories as premature, as fact discovery has not been completed and many of Google's corporate witnesses have not yet testified, and to

the extent it seeks information that is the subject of expert discovery.

16. Space Data objects to the Interrogatories as premature, given Space Data has not completed its investigation of facts, witnesses or documents relating to this case, has not completed analysis of available information, and has not completed preparation for trial. Trial is not set in this matter until August 5, 2019. Opening expert reports are not due until September 7, 2018.

17. Space Data objects to the Interrogatories to the extent they seek electronically stored information ("ESI") in in a format not maintained by Space Data, ESI from sources that are not reasonably accessible because of undue burden or expense, or ESI in a format that is unduly burdensome and not reasonably proportionate to the needs of the case where other formats have been produced or are available. Space Data objects to the Interrogatories to the extent they are inconsistent with or purport to impose upon Space Data obligations exceeding those set forth by the Stipulated Order Re: Discovery of Electronically Stored Information, the Stipulated Order Re: Discovery of Emails, or any other agreements as to ESI reached by the parties or ordered by the Court.

18. Space Data objects to Definition No. 1 as vague, ambiguous, overly broad and unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence to the extent it purports to include within the scope of "Space Data," "you" "your" or "Plaintiff" entities that are not Plaintiff. Space Data will construe "Space Data," "you" "your" and "Plaintiff" to mean Plaintiff Space Data Corporation.

19. Space Data objects to Definition Nos. 6 and 8 to the extent they purport to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan agreed or that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties. Space Data will respond in accordance with these rules / agreements. Space Data further objects to these definitions to the extent they seek

information protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege, protection or immunity, including FRE 408 and FRCP 26(b), or information subject to a non-disclosure or confidentiality agreement or protective order with a third party, or information subject to a legal, regulatory or government restriction, or information that contains the trade secrets of or confidential or proprietary information of a third party.

20. Space Data objects to Definition No. 7 as vague and ambiguous to the extent that the parties may have different interpretations of the term "Confidential Information" as used in the parties' NDA.

21. Space Data objects to Definition Nos. 9 and 10 to the extent they purport to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan agreed or that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties. Space Data will respond in accordance with these rules / agreements. Space Data further objects to these definitions to the extent they seek information protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege, protection or immunity, including FRE 408 and FRCP 26(b), or information subject to a non-disclosure or confidentiality agreement or protective order with a third party, or information subject to a legal, regulatory or government restriction, or information that contains the trade secrets of or confidential or proprietary information of a third party, or sensitive personal or private information that is otherwise confidential or protected by a person's right to privacy. Space Data also objects to these definitions as vague, ambiguous, overly broad and unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence.

22. Space Data objects to Definition No. 15 as unduly burdensome to the extent it seeks to include affiliates, subsidiaries, predecessors-in-interest, successors-in-interest, and

present and former officers, directors, managers, employees, consultants, agents, attorneys, accountants, and representatives of Defendants within the definition of "third party." Space Data will not read the term "third party" to include the Google or Alphabet associated persons described in the immediately preceding sentence.

23. Space Data objects to Instruction No. 1 to the extent it purports to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan agreed or that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties. Space Data will not provide an "incomplete response / efforts that were made log." Space Data further objects to Instruction No. 1 to the extent it seeks information that is outside of Space Data's possession, custody, or control. Space Data further objects to Instruction No. 1 as vague, ambiguous, overly broad and unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence. For example, the term "best knowledge" renders the request vague, ambiguous and unduly burdensome.

24. Space Data objects to Instruction No. 2 to the extent it purports to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan agreed or that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties. Space Data also objects to Instruction No. 2 as unduly burdensome to the extent it purports to require that Space Data "state the grounds for any objection with specificity" with regard to post-filing privileged, work product, trial preparation or otherwise immune materials or information.

25. Space Data objects to Instruction No. 3 to the extent it purports to impose upon Space Data obligations exceeding those set forth in the Federal Rules of Civil

Procedure and the Local Rules of the United States District Court for the Northern District of California, any discovery plan agreed or that may be agreed to by the parties and approved by the Court, any other schedule or ruling that may be set forth by the Court, or any other agreement of the parties. Space Data further objects to Instruction No. 3 as vague and ambiguous, especially as to the phrase "subject to Google's right to clarify the meaning in the same or a different manner." Space Data does not agree that Google has any rights beyond those provided by the Federal Rules of Civil Procedure or the Local Rules of the United States District Court for the Northern District of California.

26. The fact that part or all of any request has been answered shall not be construed to be a waiver of any objections to any request.

27. Space Data expressly incorporates each of the foregoing General Objections into each of the Specific Objections set forth below. No response shall be understood as, nor is intended to be, a waiver of any General Objection or any Specific Objection that may be separately stated with respect to any response. Nor shall any response to a request be deemed to constitute any agreement or concession that the subject matter thereof is relevant to this action.

28. All of the responses set forth below are made without waiving or intending to waive any objection, including but not limited to objections as to competency, relevancy, materiality, authenticity, privilege, or admissibility. Space Data reserves the right to revise or supplement its responses to the Interrogatories at any time should additional responsive information be discovered and/or additional claims be asserted. Space Date also reserves the right to assert additional objections at any time.

AMENDED RESPONSES TO INTERROGATORIES

INTERROGATORY NO. 12:

Identify with specificity each item of Confidential Information that Space Data contends Google has used or disclosed in violation of the NDA.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because, amongst other things, the request's reference to "each item of Confidential Information" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data also objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Space Data also objects to this interrogatory as premature, given that Space Data has not completed its investigation of facts, witnesses or documents relating to this case (including the NDA), has not completed discovery, has not completed analysis of available information, and has not completed preparation for trial. Space Data also objects to this interrogatory to the extent it seeks trade secret, confidential, or proprietary information of a third party, sensitive personal or private information of a third party, or sensitive government information. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

Space Data has identified, with specificity, the trade secrets that it is informed and believes Google has misappropriated in its Fifth Amended § 2019.210 Disclosure, served on May 8, 2018 (the "2019 Trade Secrets"). The 2019 Trade Secrets are summarized below:

Trade Secret Category One: Wind Data Trade Secrets Enumerated

1. The proprietary wind data on display for Google during its February 15, 2008 visit to Space Data's Chandler, Arizona facility, representing data related to 11 flights and depicted in the screenshots attached thereto as Exhibit A to the Fifth Amended 2019.10

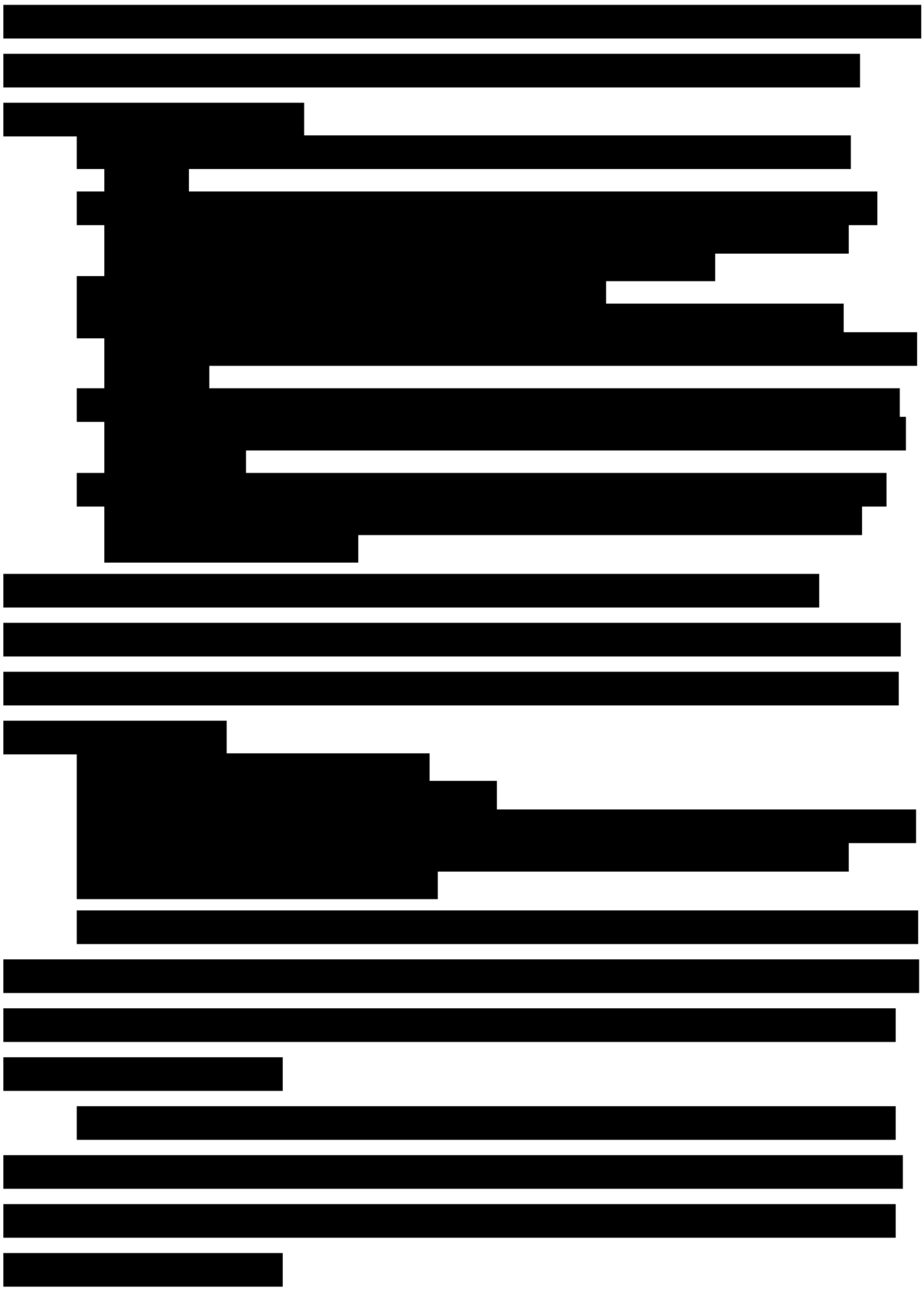
Statement (pp. 17, 35, 52, 68, 84, 102, 118, 102, 118, 166, 183, 196, and 212).

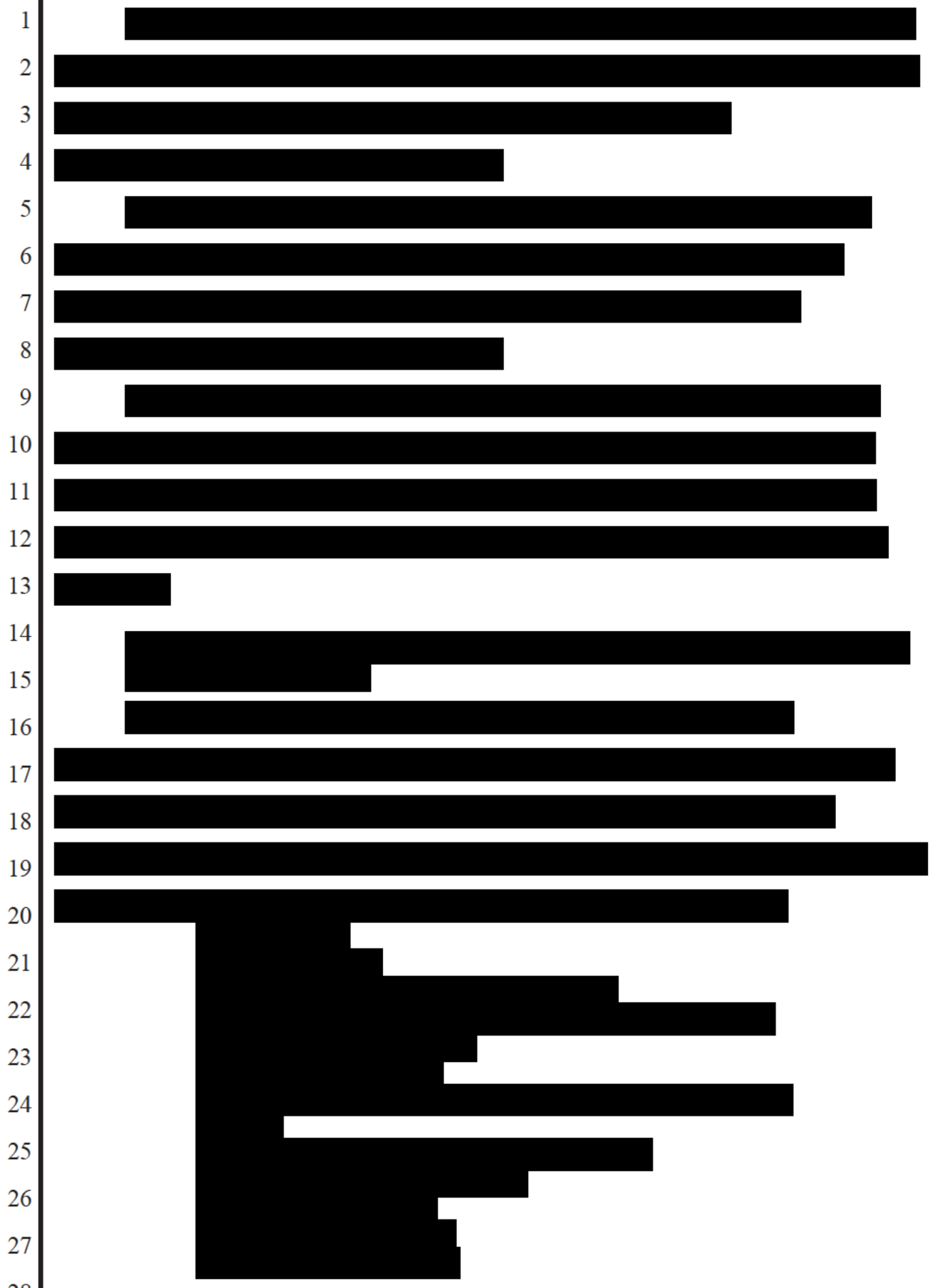
2. The conclusion that a stratospheric balloon array comprising balloons spaced less than 100 miles apart (a "Tight Array") could be flown to optimize communications with mainstream broadband devices based upon taking advantage of Space Data's proprietary knowledge that at 60,000 to 80,000 feet (the "Peaceful Band"), there are sufficient layers of wind at different but appropriately consistent velocities to permit a Tight Array to be maintained; wherein the Tight Array is maintained by steering balloons by adjusting their altitude to catch different winds of different velocities at different altitude levels within the Peaceful Band. In particular, the knowledge that many different altitude zones exist within the Peaceful Band and the knowledge of the different velocities at those altitudes allows recently-launched balloons to be lifted to specific altitudes where the known wind velocity will transfer these balloons into tight slots within the existing balloon array. If only a few altitude zones were known with uncertain wind velocities, balloons could not be maneuvered precisely. The consequence would be that a tight array of balloons could not be maintained, as both existing and newly-launched balloons would drift in uncertain ways and could not be controlled with precision.

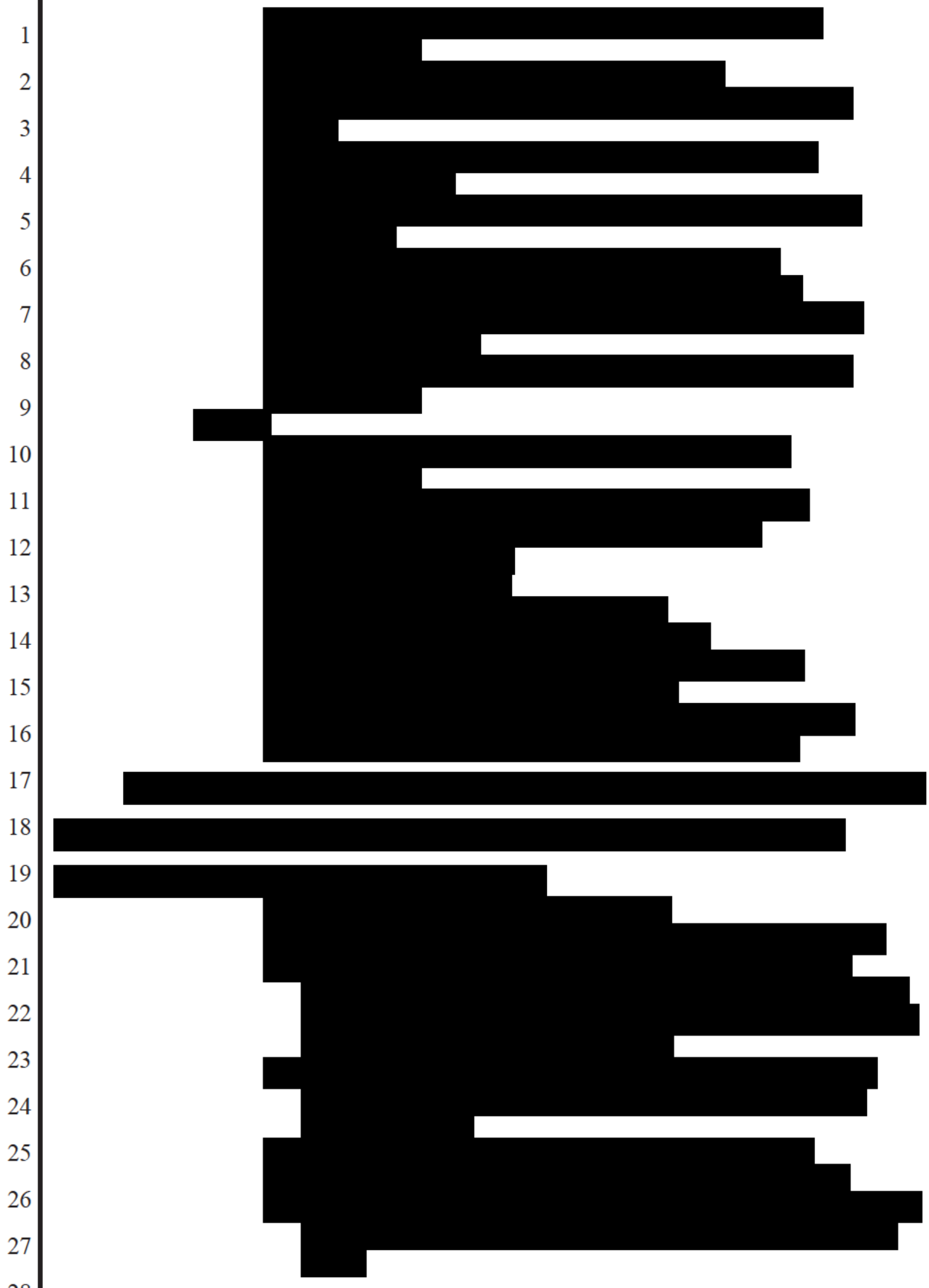
Trade Secret Category Two: Hover Algorithm

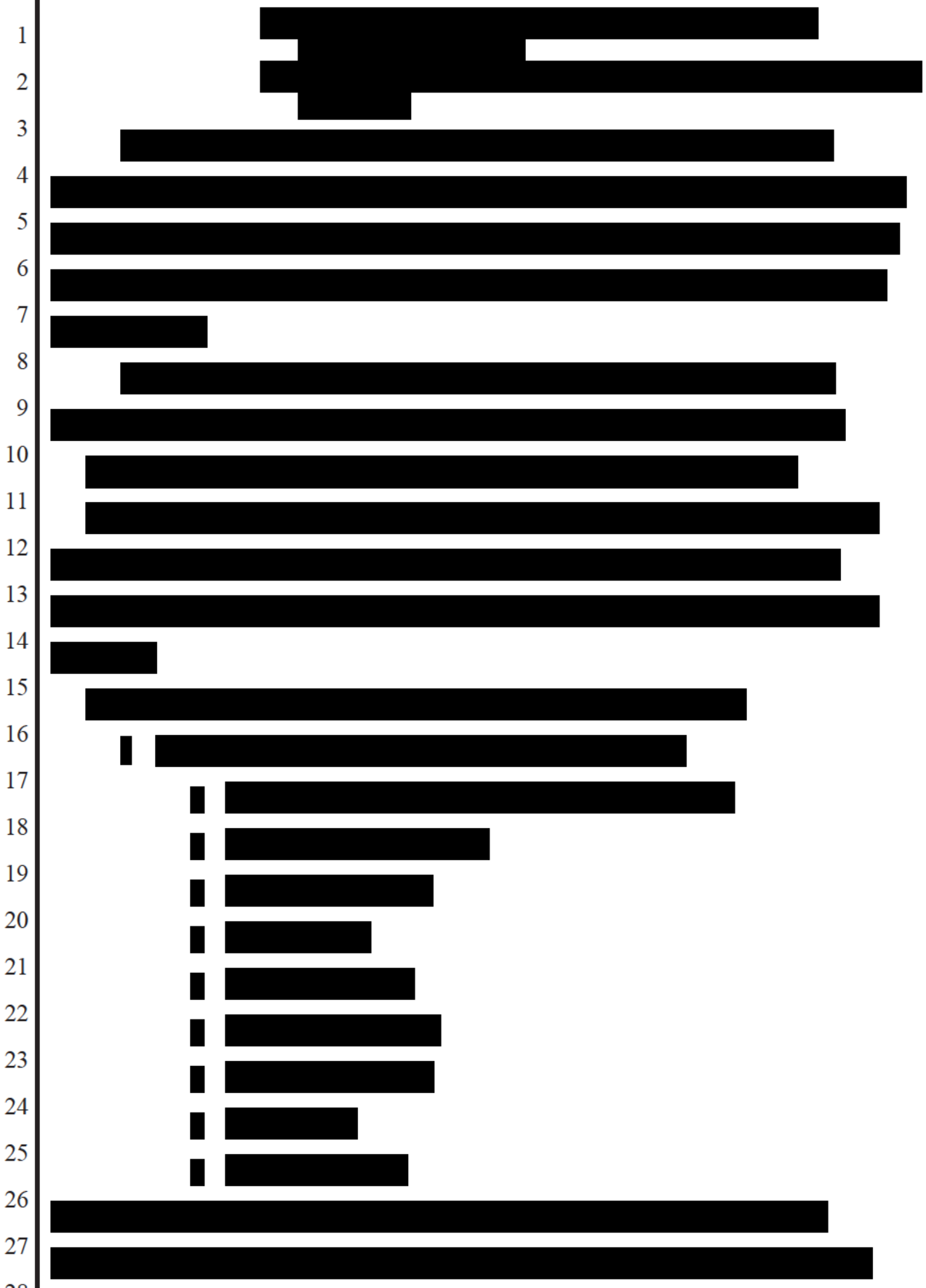
1. Space Data's optimized dimensions, shape, and design of vent and ballast as were on display to Google during the February 2008 visit. Photos of the optimized vent and ballast that were shown to Google are attached thereto as Exhibit B to the Fifth Amended 2019.10 Statement. This trade secret covers the particular vent depicted in the photos in Exhibit B to the Fifth Amended 2019.10 Statement which has a cylindrical base, a cone-shaped top, measures approximately 3-inches-wide and approximately 5-inches-high and has one hole

[redacted]









[redacted]

These 2019 Trade Secrets are Space Data's proprietary confidential information and constitute Space Data Confidential Information under the parties' NDA. Google's use and disclosure of the 2019 Trade Secrets outside the bounds of the parties' NDA constitutes a breach of contract. To the extent that any of the information identified as a 2019 Trade Secret by Space Data is found not to constitute a trade secret under applicable law (or, in the event Space Data's 2019.210 Disclosure is found to be insufficiently detailed), these asserted trade secrets remain, nonetheless, Space Data Confidential Information and any disclosure or use of that information outside the bounds of the NDA would still be a breach of contract.

Further, Space Data identified, pursuant to the NDA, an enumerated list of 16 categories of confidential information disclosed to Google during the February 2008 visit to Space Data's facilities in an email from Eric Frische to Michael Pearson, dated February 19, 2008. *See* GOOG-SD-00157496. Each of those identified categories constitutes Space Data Confidential Information, as do the vision slides and financial information shared with Google prior to the February 2008 visit. The vision slides and financial information shared with Google prior to the February 19, 2008 visit were identified as Confidential Information at the time of disclosure to Google. For example, the vision slides provided to Google on January 2, 2008 by email were marked "Proprietary / Confidential." Google's use and disclosure of this Confidential Information outside the bounds of the parties' NDA constitutes a breach of contract.

To the extent Space Data's Original, First Amended, Second Amended, Third Amended and Fourth Amended 2019 Statements identified information as trade secrets that is in addition to the Confidential Information described in the preceding responsive paragraphs, this additional information constitutes Space Data proprietary confidential information and constitutes Space Data Confidential Information under the parties' NDA. Google's use and disclosure of this Confidential Information outside the bounds of the parties' NDA constitutes a breach of contract.

See also Space Data's response to Interrogatories 13 and 14.

INTERROGATORY NO. 15:

State all facts and identify all documents that support your contention that you have been injured by any use or disclosure of any item of Confidential Information by Google in violation of the NDA, and identify all persons with knowledge of such facts.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because, amongst other things, the request's reference to "all facts"; "all documents"; and "all persons" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data further objects to this request as premature to the extent it seeks information that is the subject of expert discovery. Space Data's technical experts are assessing Defendants' use of Space Data's confidential information; such assessments will ultimately inform the damages analysis in this case. Space Data's damages and technical experts have not concluded their analysis and are not expected to do so until opening expert reports are due (September 27, 2018). The close of expert discovery in this case is December 7, 2018.

Space Data further objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Space Data further objects to this interrogatory to the extent it seeks trade secret, confidential, or proprietary information of a third party, sensitive personal or private information of a third party, or sensitive government information. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

The parties entered into The Mutual Non-Disclosure Confidentiality and Nondisclosure Agreement ("NDA") effective as of December 1, 2007, for the purpose of engaging in "discussions and negotiations concerning a proposed acquisition of shares or assets" of Space Data. This was the only permissible use of the Space Data information.

Because Google told Space Data it was interested in acquiring the company and because the parties had executed the two-way NDA, Space Data provided Google with unprecedented access to confidential, proprietary information and trade secrets. Space Data felt Google's interest in acquiring the company was sincere, since Google co-founders Larry Page and Sergey Brin both attended Space Data's first meeting at Google's headquarters in September 2007 and a follow-on meeting in November 2007. Then, on November 28, 2007, Minnie Ingersoll emailed Space Data and copied Mike Pearson from Google's corporate development team saying "I think he's the right person to help us take this discussion into more formal deal terms." *See* GOOG-SD-00144458. Once the NDA was signed, Space Data provided Google with its proprietary historical financial statements, financial projections, and modeling, which revealed information regarding all the relevant cost variables relevant to running a balloon-based communications network. Space Data's financial details are not publicly known and its financial model was proprietarily developed over years of operating as the only balloon-based communications company. Detail about the actual cost drivers of a balloon-based communications network, developed from Space Data's actual operational experience, provided value and a competitive advantage to Space Data. These details were only provided to Google for the purpose of evaluating a potential acquisition.

Space Data also provided proprietary "vision" slides to Google, which detailed different potential applications of Space Data's technology. These slides were also designated as confidential under the NDA. As described fully in the Third Amended

Complaint, on February 15, 2008, a team of Google engineers, corporate development personnel, and Google's co-founders, Larry Page and Sergey Brin, came to visit Space Data to perform technical due diligence. Space Data had never before and has not since provided the kind of access Google had during that visit.

The Google team launched Space Data balloons and then received tours of Space Data's labs, workshops, and Network Operations Center ("NOC"). In the labs and workshops, Google was able to view and photograph deconstructed payloads and components. Throughout the tour, Space Data's team provided detail about Space Data's payload design, vent, ballast, and thermal management techniques that were on display. During the tour of the NOC, Space Data allowed Google to take up-close, detailed photographs of the wind data, flight data, hover inputs and outputs, and NOC control system. Space Data also explained to Google, in technical detail, what was happening on each screen in the NOC, what the wind data was showing, and how all the information fit together. Space Data explained to Google that, based on its 200,000 flight hours of knowledge, Space Data had concluded that a stratospheric balloon array comprising balloons spaced less than [redacted] flown to optimize communications with mainstream broadband devices based upon taking advantage of the layers of wind at different but appropriately consistent velocities [redacted] Space Data explained it had determined that many different altitude zones exist [redacted] Space Data's proprietary knowledge of the different velocities at those altitudes allows recently-launched balloons to be lifted to specific altitudes where the known wind velocity will transfer these [redacted] existing balloon array. This knowledge differed than what was in the public domain at the time and was key because, if only a few altitude zones are known with uncertain wind velocities, balloons cannot be maneuvered as precisely. The consequence [redacted] be maintained.

Space Data also explained in detail to Google what was displayed on the NOC

screens regarding the hover algorithm and how, in concert with the optimal design and placement of the vent and ballast system on display for Google, Space Data achieves and maintains hover. *See* also Response to Interrogatory No. 19.

Space Data would never have shared its core, technical knowhow, developed from hundreds of thousands of flight hours, if it thought Google would be permitted to use such information for its own purposes without any credit or payment to Space Data.

Google failed to treat Space Data's confidential information with the appropriate controls under the NDA from the beginning. On [insert date] Google

In 2011, when Google claims it was first starting to develop Loon internally, a member of the Loon team, Josh Weaver, emailed Dan McCloskey and Phil Gossett, two key members of Google's due diligence team who visited Space Data on February 15, 2008, wanting to find out what the team learned from their view into Space Data. As Weaver put it then:

[redacted]

See GOOG-SD-00158448-451. Dan McCloskey, Larry Alder and Phil Gossett, each responded with substantive summaries of Google Space Data interactions. *See id.* This one example of cross-contamination between the Google Loon team and the Space Data due diligence team was not an isolated incident. *See generally* Response to Interrogatory No. 14.

Defendants improperly developed Google Loon based on Space Data's confidential and trade secret information, in breach of the NDA. Defendants' use of Space Data's proprietary financial modeling, historical financial data, vision slides, and information derived from access to Space Data's proprietary wind data, hover algorithm, thermal management system, altitude control system, and network operations center to develop

Project Loon constitutes a breach of the NDA. Defendants' disclosure of certain Space Data's trade secrets and confidential information in Google's '193 Patent application as and asserted "ownership" of Space Data's intellectual property is also a breach of the NDA as it violates § 8, which states that "[no Party acquires any intellectual property rights under this Agreement[.] Google also breached the NDA by sharing proprietary, Space Data information with the entire Google Access group in contravention of the purpose of the NDA, which was to evaluate and acquisition or business partnership with Space Data.

Space Data suffered damage as a direct and proximate result of Defendants' breaches of the NDA. Assuming that Google had performed on the NDA (*i.e.* had kept Space Data's confidential information and trade secrets secret and not used the information in contravention to the purpose of the NDA), Space Data would not have to be competing with Loon while Google used Space Data's own technology. Space Data would not have lost out on potential profits to Loon if Google had not usurped Space Data's confidential information out right. *See* July 10, 2018 Amended Response to Interrogatory No. 6. The injury suffered by Space Data includes, without limitation, the loss of sales and profits it would have earned but for Defendants' actions, and injury to Space Data's reputation among potential and existing customers, business partners, investors, and in the industry in general.

The calculation of Space Data's damages for Google's breach may include, without limitation, loss of profits Space Data would have earned but for Google's breach, disgorgement for unjust enrichment by the Defendants, payment of reasonable royalty fees, as well as injunctive relief. Space Data also seeks pre-judgment and post-judgment interest on the damages caused to them by reason of Defendants' conduct at the maximum legal rates provided by statute or law and an award for its costs and disbursements in this civil action, including reasonable attorneys' fees.

1. Lost Profits

Google benefitted from breaching the NDA by, among other things, using Space Data's proprietary technical and financial data on how to establish and run an optimal

balloon-based network, saving Google the substantial costs it would have had to occur to develop that information on its own. This helped Google advance it time to market and keep it competitive. Space Data is entitled to the difference in profits between the actual and the so-called "but-for" world absent Google's breach of the NDA. Plaintiff should be awarded its lost profits as a result of the breach if the breach caused it to lose sales, to receive a lower price or margin on sales than it otherwise would have received (so-called "price erosion"), or to incur costs that it otherwise would not have incurred.

Space Data was and remains a fully operating business. It has an office and manufacturing facility in Chandler, Arizona. It has the ability to scale-up its manufacturing process manufacture and indeed has done so to meet high demand in the past. Space Data has, in the past 4 years, been in commercial negotiations with and provided commercial demonstrations for [redacted] and has had commercial discussions with [redacted] as well. *See* SD_825887-888; SD_825899-803; SD_825908; SD_825910-911; SD_825921-923; SD_825741-743; SD_825972-973; SD_825747-750; SD_825744-746; SD_825949-951; SD_825941-945; SD_825929-933; SD_825924-928; SD_825946-948; SD_825934-940; SD_825912-914; SD_826017-020; SD_825884; SD_825909; SD_825979-981; SD_825777-782; SD_825789; SD_825783-788; SD_825766-776; SD_825982-987; SD_825988-990; SD_825991-995; SD_825996-; SD_825997-6001; SD_826002-007; SD_826008; SD_826009-012; SD_826013; SD_826014-015; SD_.825896-898; SD_825885-886; SD_825903-904; SD_825899-902; SD_825893-895; SD_825891-892; SD_825905-906.

Space Data has also marketed its high altitude balloon system for wide-area disaster communications since 2001, as its technology offers a quick way to deploy coverage to an area affected by natural disasters or other emergencies in less than 30 minutes. *See* SD_521364-382; SD_825919. Over the past few years, Space Data has been in conversations with [redacted] to collaborate [redacted] a project which is exploring ways to establish broadband coverage for emergency first responders or to restore or expand networks after a disaster. *See* SD_825908; SD_825910-911; SD_825970-

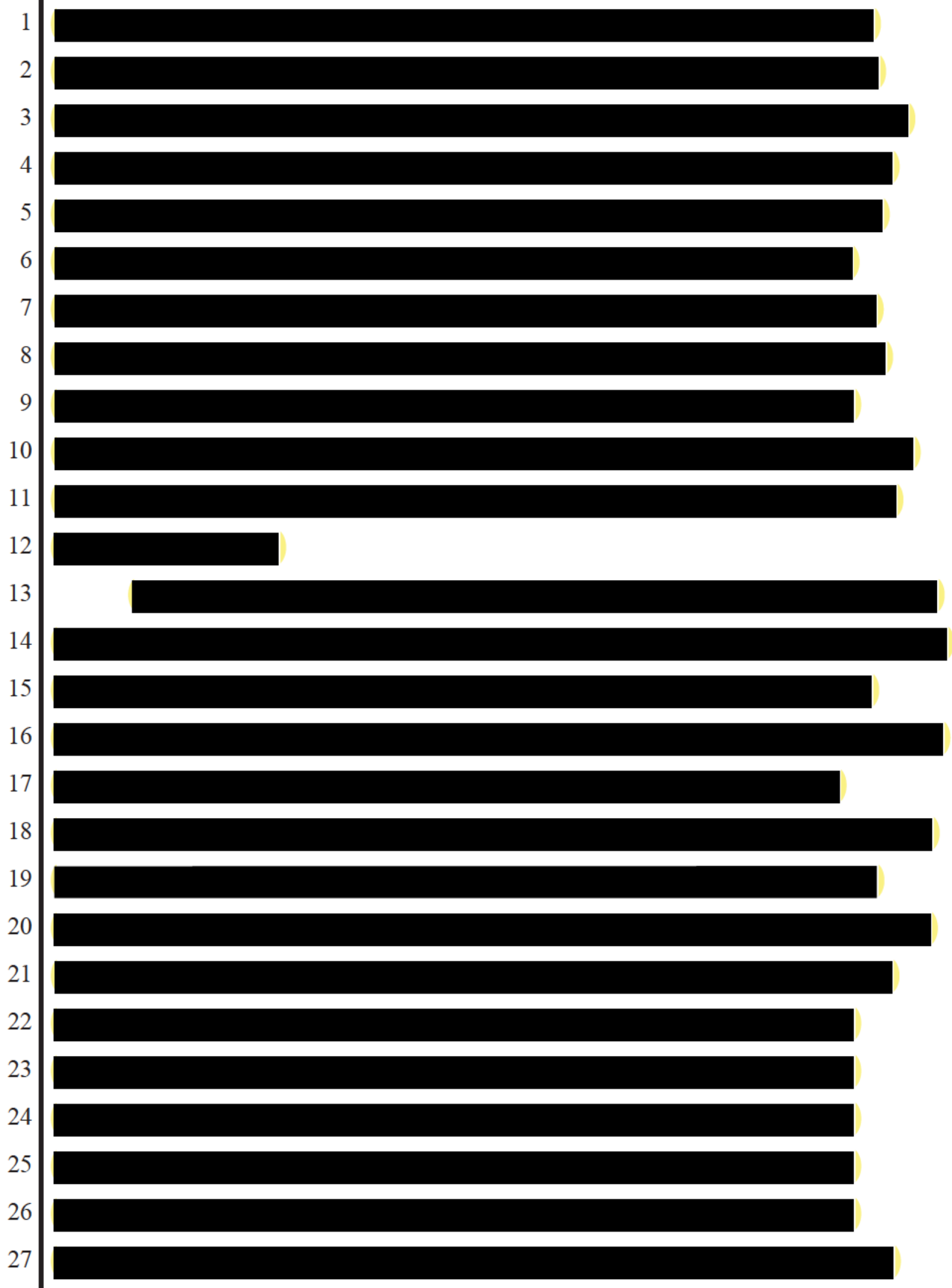
971. These are two areas Google has solidly set its sights on.

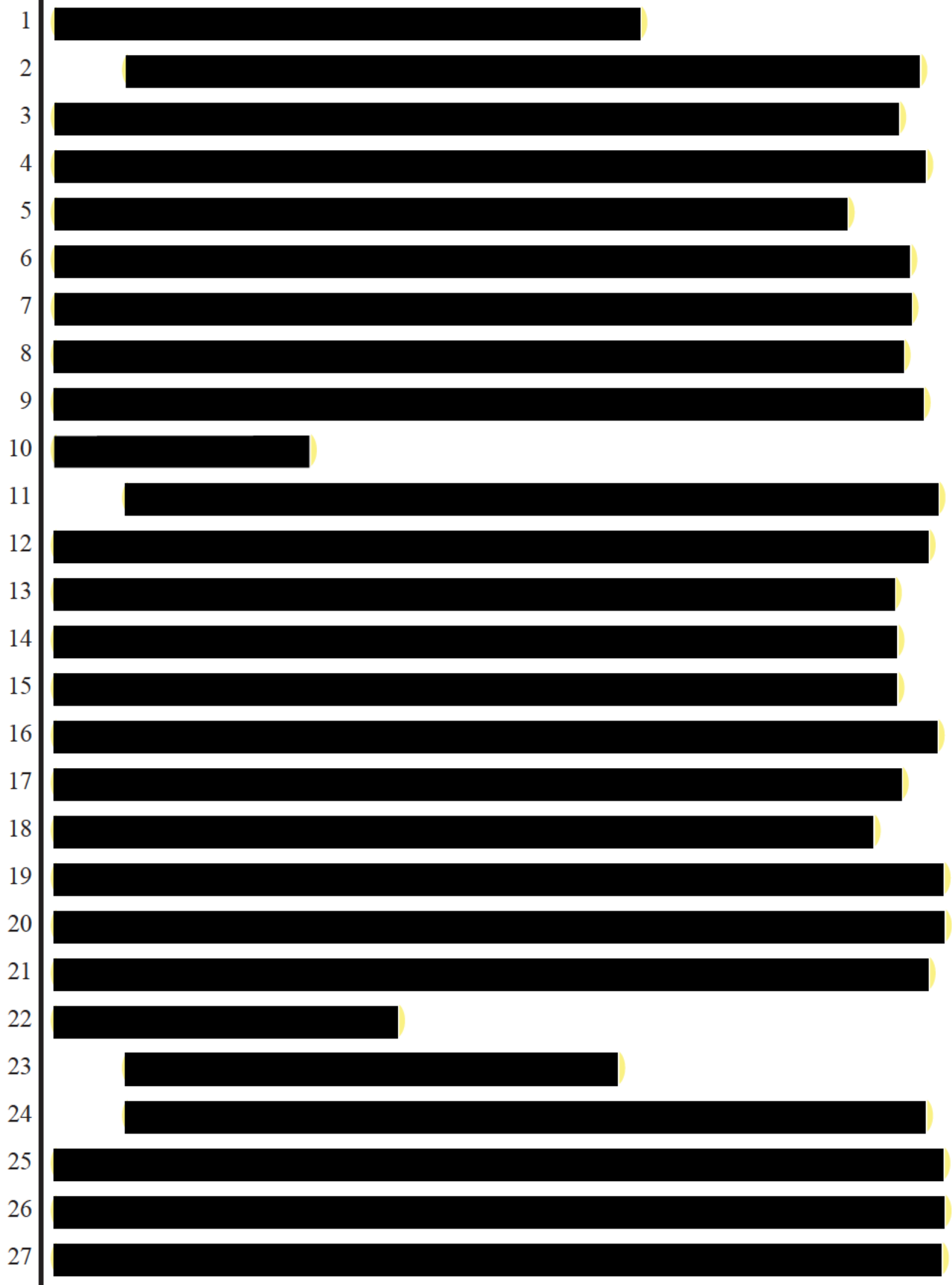
Space Data has raised over $75 million in private capital to fund the development of its technology and business.[2] From 2007 through 2017, Space Data generated total income of over [redacted], with gross profits of nearly [redacted].[3] However, after Google's initial public launch of Project Loon in June 2013[4], Space Data's annual revenues decreased substantially for several years before rebounding slightly in 2017.[5]

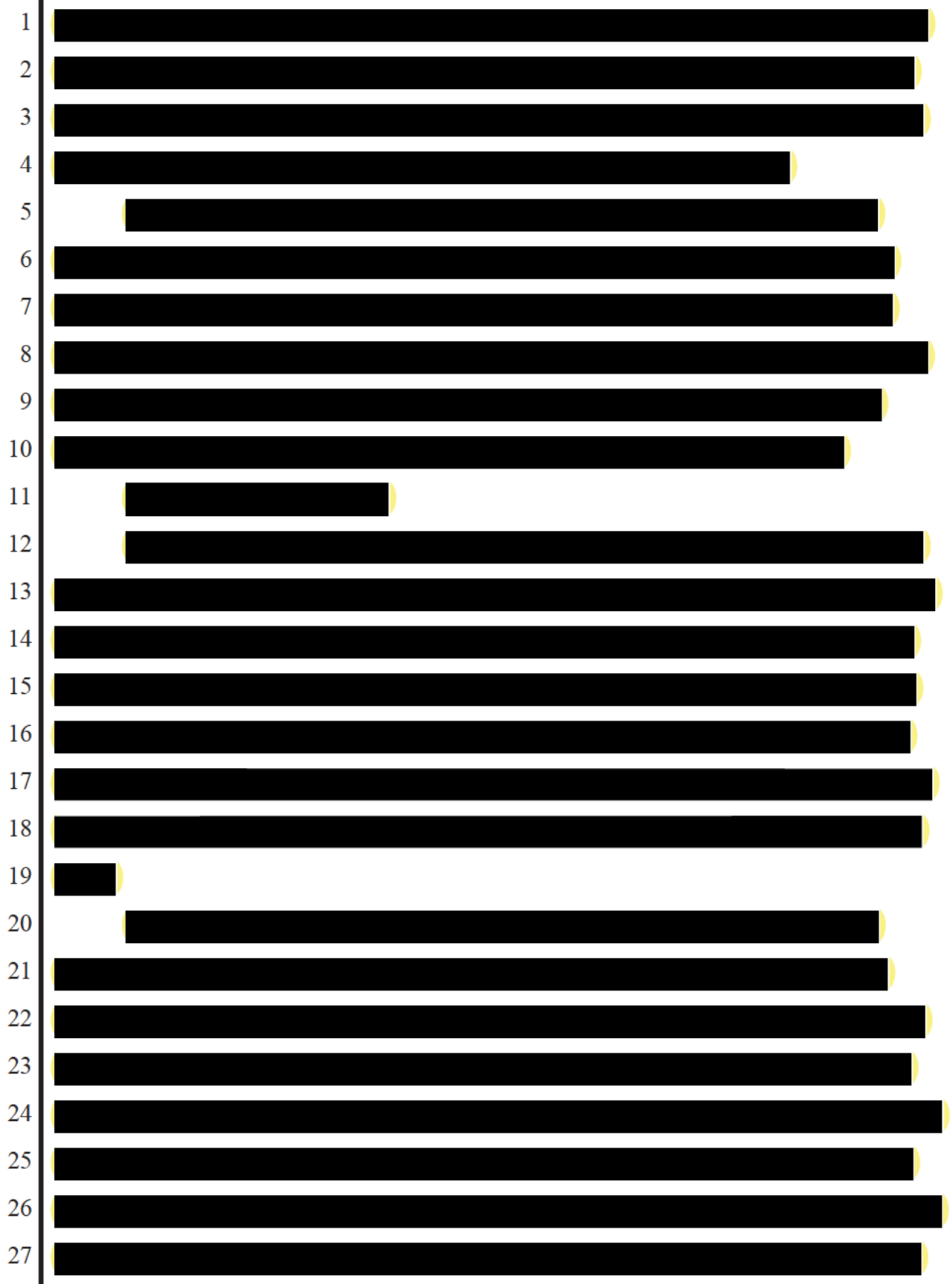
In order to calculate Space Data's lost sales, a first step is to consider Google's projects to determine whether competition from Google hindered Space Data's ability to compete and/or win the project.

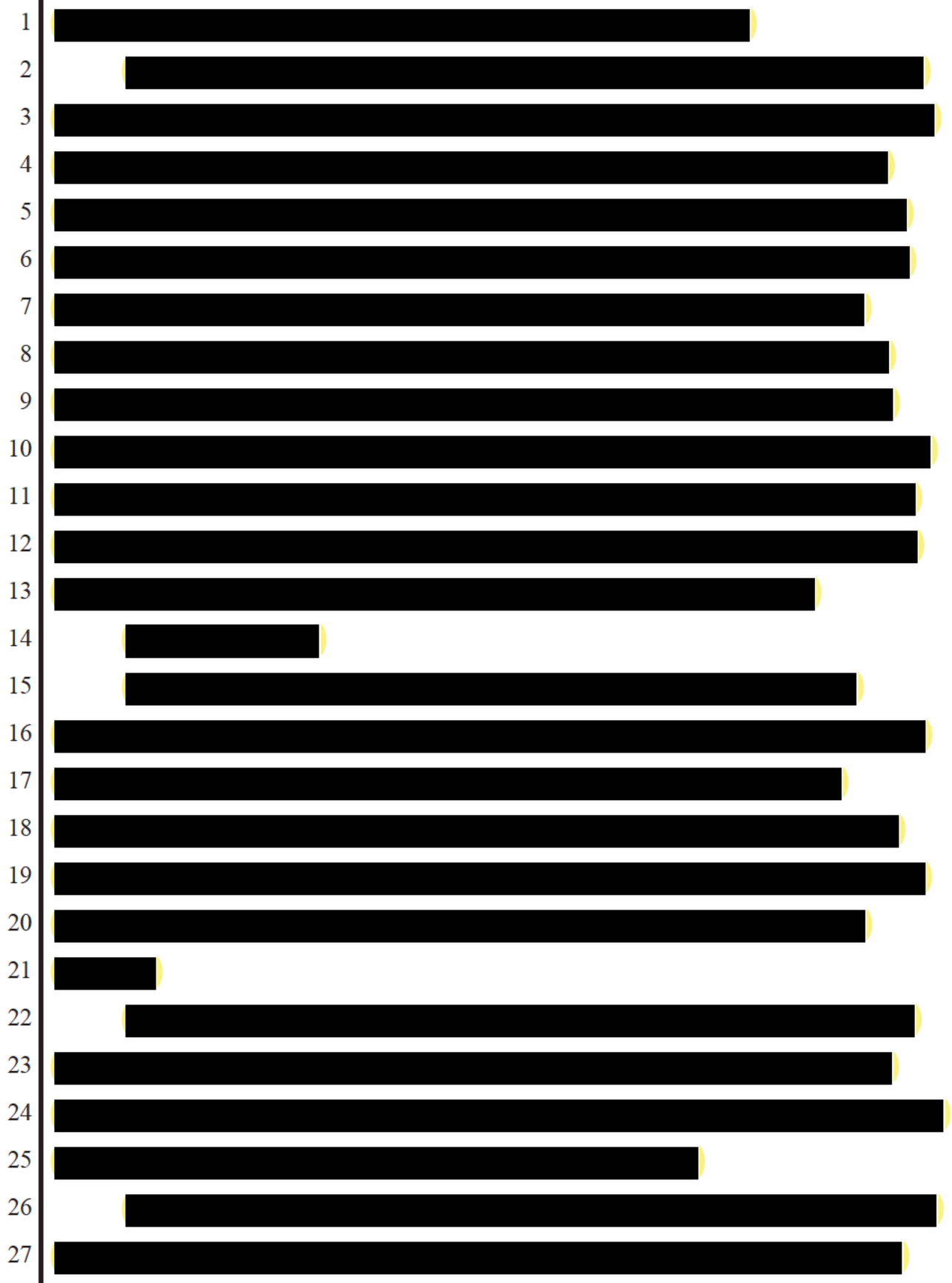
[redacted]

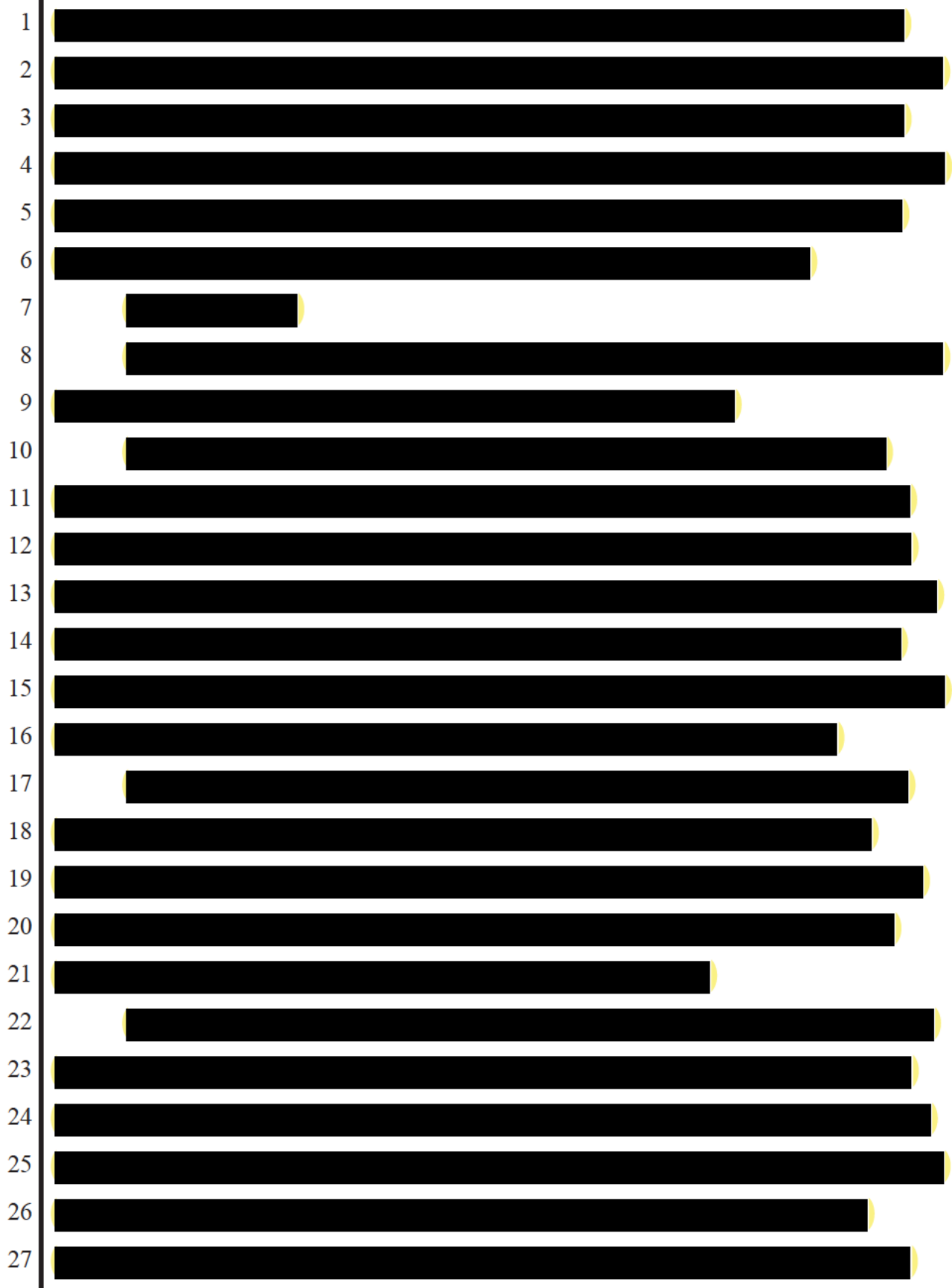
[2] "Investors," *Space Data*, available at https://www.spacedata.net/company/investors/, accessed January 30, 2018.
[3] Profit & Loss: January 2007 through December 2017, Space Data Corporation, January 31, 2018. (SDC PL 10 yrs.pdf)
[4] Third Amended Complaint, ¶ 224.; Vanian, Jonathan, "New Lawsuit May Deflate Google's Big Internet Balloon Project," *Fortune*, June 16, 2016, available at http://fortune.com/2016/06/15/google-sued-project-loon-balloon-project/, accessed January 26, 2018.
[5] Profit & Loss: January 2007 through December 2017, Space Data Corporation, January 31, 2018. (SDC PL 10 yrs.pdf).











[redacted]

G. Competition

As described above, ever since Loon made its public debut in 2013, Space Data has had to compete against Google for customers, all while Google gets to take the benefit of Space Data's patented technology and proprietary trade secrets. Google operates in the same market areas as Space Data and engages in negotiations with the same domestic carriers and government divisions. Space Data has been hamstrung in its ability to close deals since Loon's arrival and the effective loss of its competitive patent advantage.

Further, the fact that Google's '678 patent was deemed to be rightfully Space Data's during the Interference Proceeding is additional evidence supporting the fact that Google Loon and Space Data are "close competitors." *See Presido Components Inc v. Am. Technical Ceramics Corp.*, 702 F. 3d 1351, 1365 (Fed. Cir. 2012). Even Google itself called Space Data a competitor when internally discussing the Puerto Rico project and Space Data's granting permission to use its spectrum for humanitarian purposes. *See* GOOG-SD-00076931 ("So this is truly an example of the entire industry rallying together, from the regulatory authorities, to telcos, to competitors, to help people who desperately need connectivity.").

2. Unjust Enrichment

Defendants were unjustly enriched by getting the benefit of Space Data's confidential, proprietary information without compensating Space Data at all. Google got the

benefit of the tens of millions of dollars and 200,000 flight hours poured into Space Data, and never paid Space Data a penny. It soaked up the information Space Data shared under NDA, and then used it for its own purposes to jumpstart Project Loon.

The doctrine of unjust enrichment is an equitable principle based on the idea that one party should not be able to unjustly enrich itself at the expense of another. The principle of unjust enrichment goes beyond merely restoring what a plaintiff actually lost. Defendant was unjustly enriched if its misappropriation of plaintiff's trade secrets caused Defendants to receive a benefit that it otherwise would not have achieved. A party acting in conscious disregard of the rights of another should be required to disgorge all profit in order to benefit the injured party and deter the perpetrator from committing unlawful acts again. Here, not only did Space Data not get the benefit of the NDA bargain (Google keeping Space Data's information confidential and using it only to evaluate a potential acquisition), Google has also misused Space Data's information for its own profit.

Another potential way of measuring unjust enrichment is the entire enterprise or acquisition value of a Space Data. Where there is substantial evidence a defendant would have acquired plaintiff if it had not chosen to misappropriate plaintiff's trade secrets instead, acquisition value may be an appropriate measure. *See X-It Products, LLC v Walter Kidde Portable Equipment, Inc.*, 227 F. Supp. 2d 494 (E.D. Va. 2002). Here, instead of acquiring Space Data's intellectual property through a purchase of the company (or license), Google simply took what it wanted. The quantum of those damages-whether considered as damages for trade secret misappropriation or Defendants' use of Space Data's information in breach of the parties' NDA- is what Defendants would have paid in a legitimate acquisition of Space Data.

Another measure of unjust enrichment to Defendants is the expected cost savings to Defendants from using Space Data's trade secrets in Defendants' Google Loon. Due to the misappropriation of Space Data's trade secrets, Defendants will benefit from many years of future cost savings due to employing Space Data's trade secrets in Google Loon's systems.

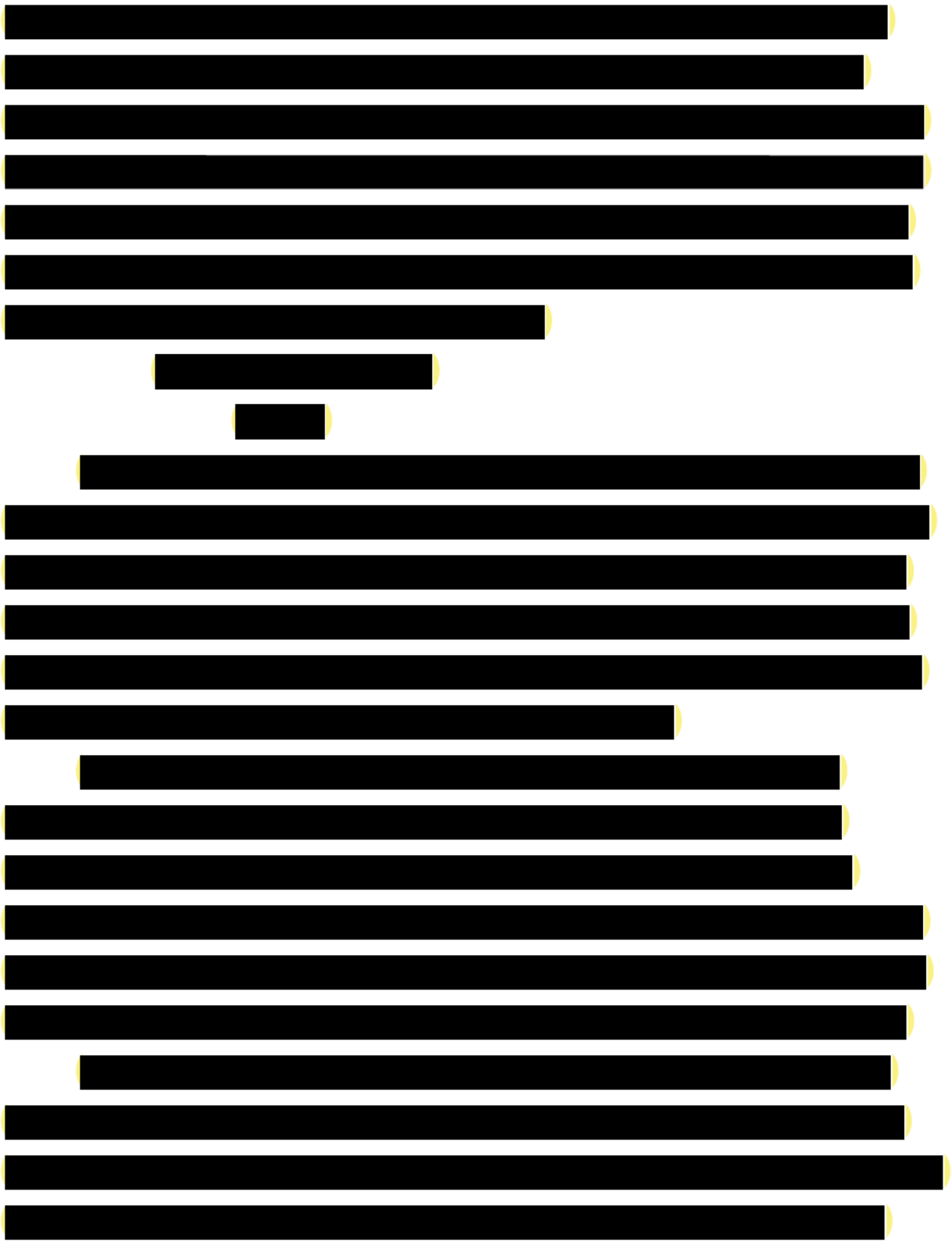
Google avoided millions of dollars in cost in not having to experiment with flying balloons at different altitudes to determine the best place to position them to sail with the winds, the quality of the [redacted]: it already had that information from Space Data. Google didn't need to do its own research to determine that [redacted] for insulation at altitude or the best way to address thermal management concerns at 65,000 feet: it already knew that from Space Data. Google also didn't have to expend extra time and money on its own hover algorithm, it could start from the knowledge Space Data shared with it. The same is true for Google's Mission Control and financial modeling, all of it could be advanced by *years* based on starting with the information Space Data provided to Google under the guise of Google's interest in an acquisition.

Another measure of unjust enrichment to Defendants is the expected cost savings due to reduced development expenses from using Space Data's trade secrets in Defendants' Google Loon systems. One way to measure the costs that Defendants saved through their misappropriation of Space Data's trade secrets is by looking at the costs that Space Data incurred to develop those trade secrets. *See also* Response to Interrogatory No. 7.

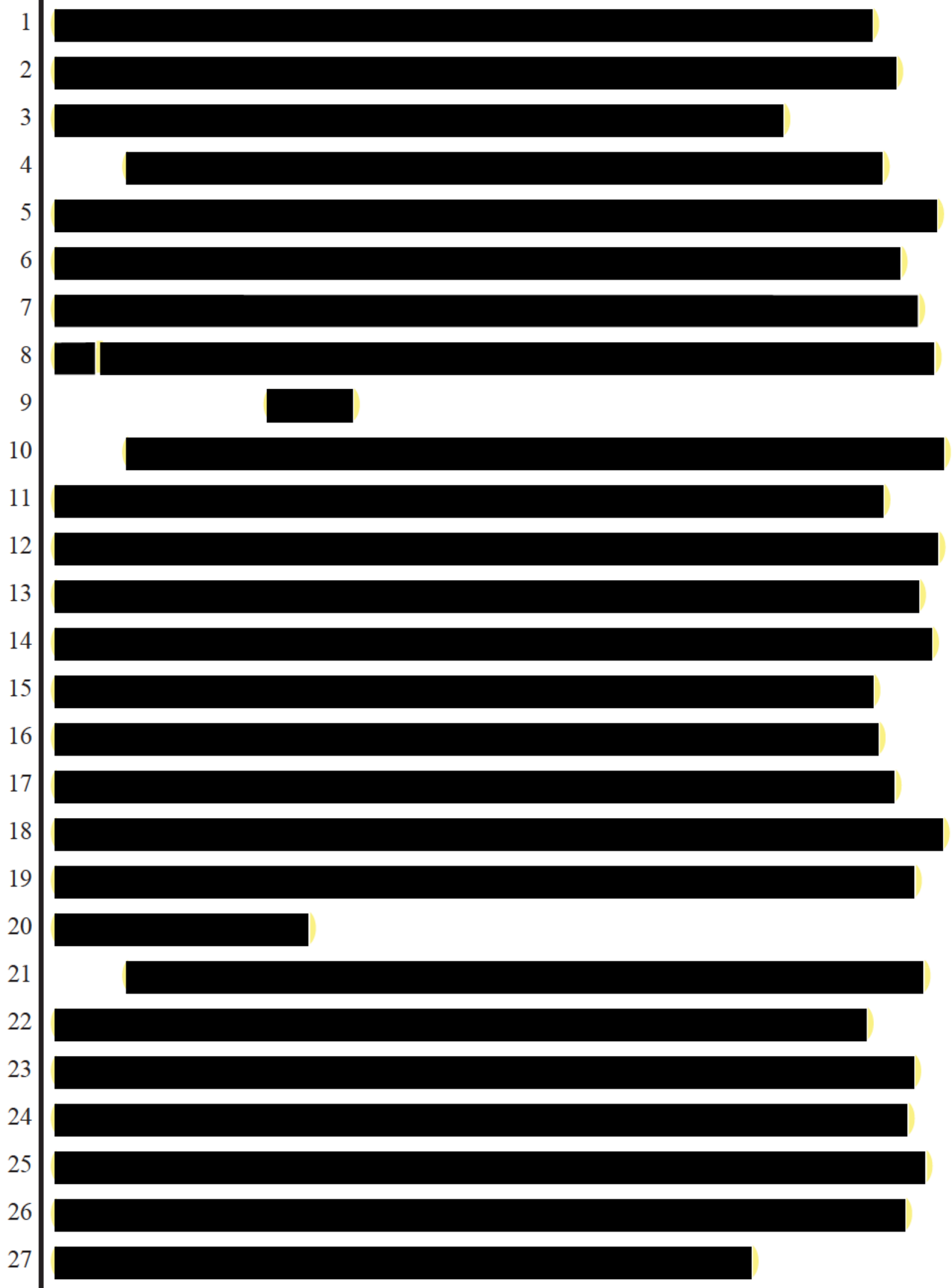
3. Reasonable Royalty

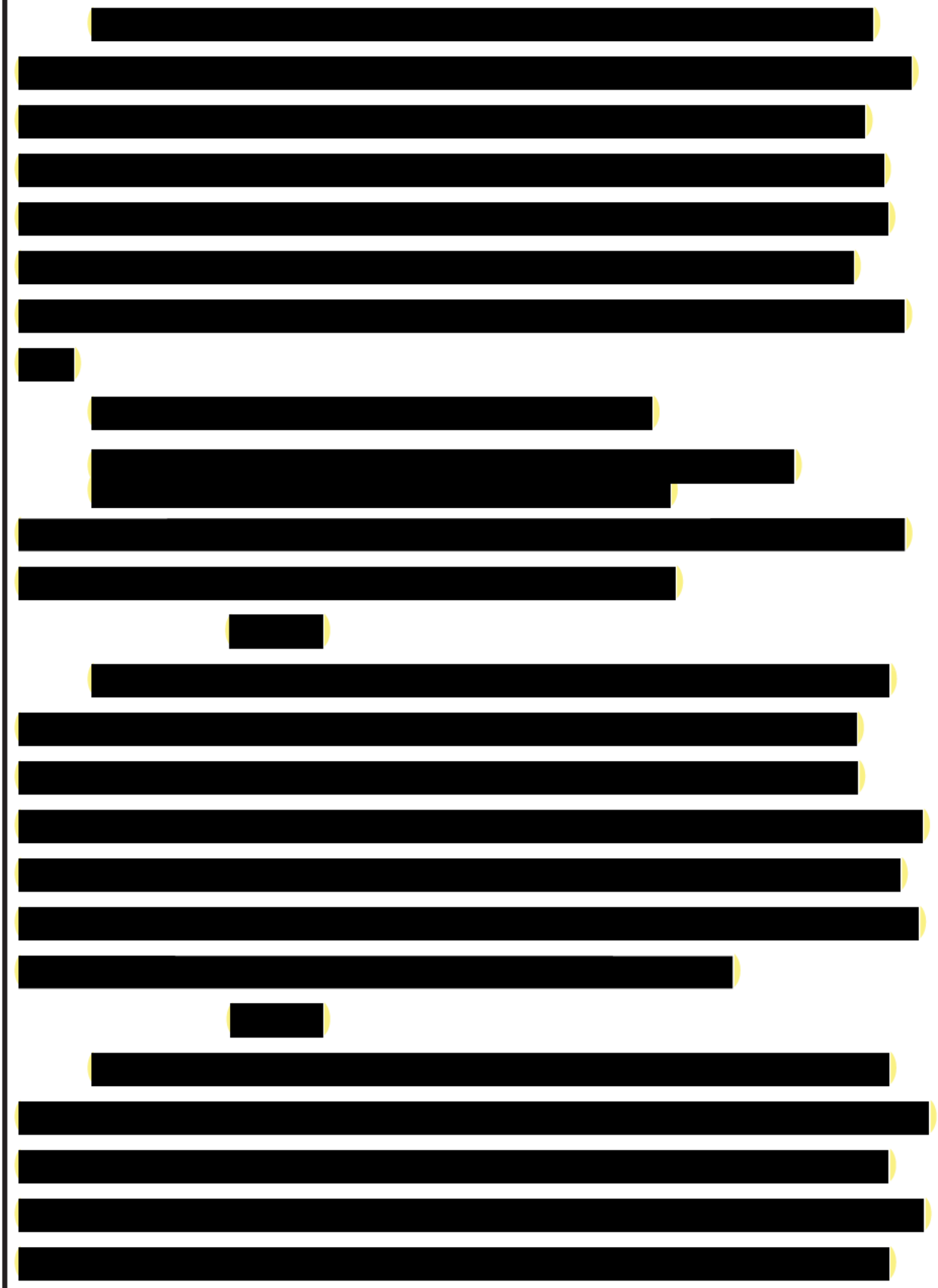
Damages may also be measured by a reasonable royalty in a manner similar to the method used to value trade secret damage and patent damages. There are different methodologies for calculating reasonable royalties which may be applicable to damages in this matter, namely, a Georgia-Pacific approach, an "analytical" approach, a cost saving approach, and a comparables approach.

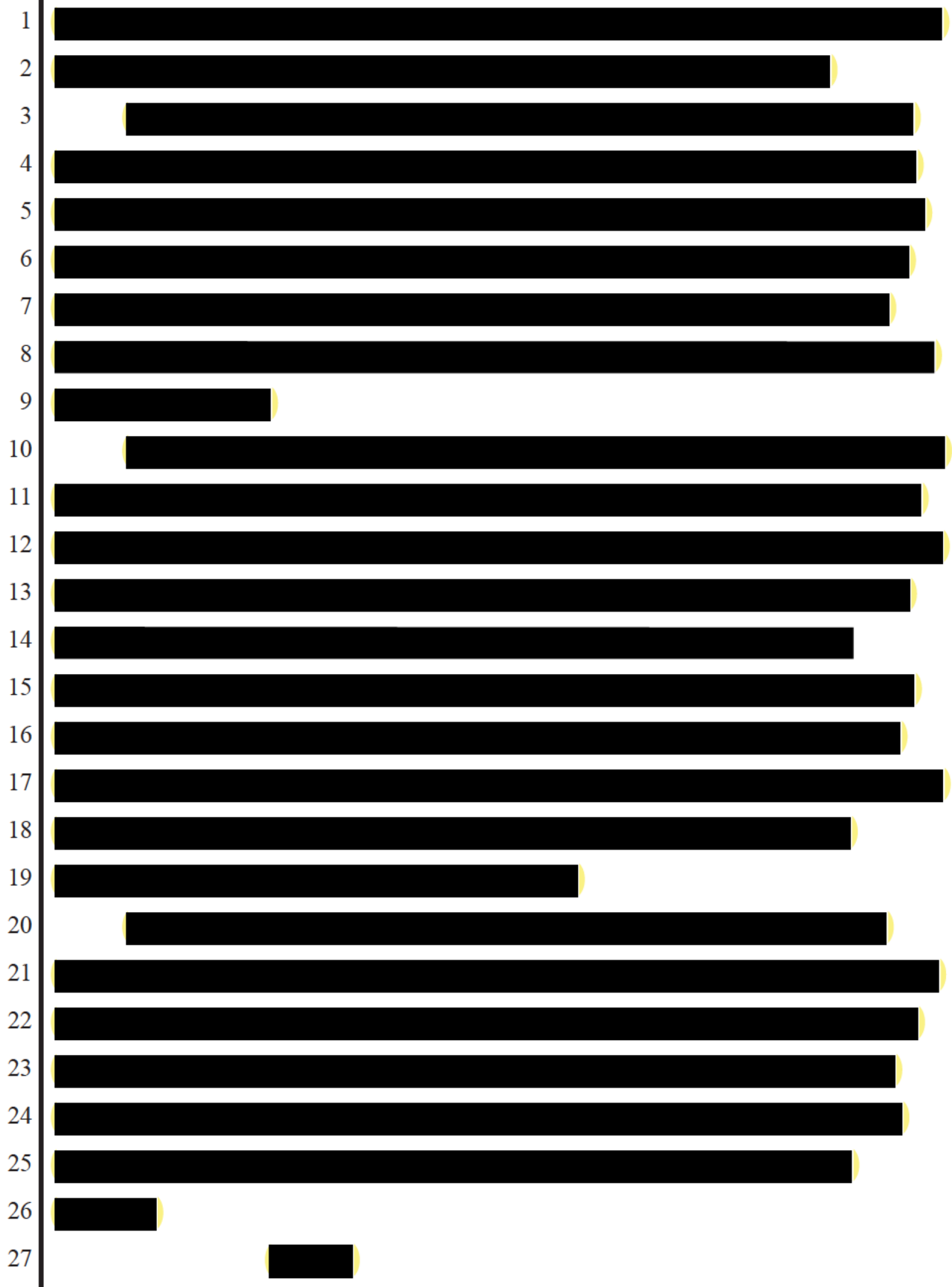
Properly constructed, the hypothetical negotiation reflects the relevant expectations and market factors that would have affected a real-world licensing negotiation. [redacted]

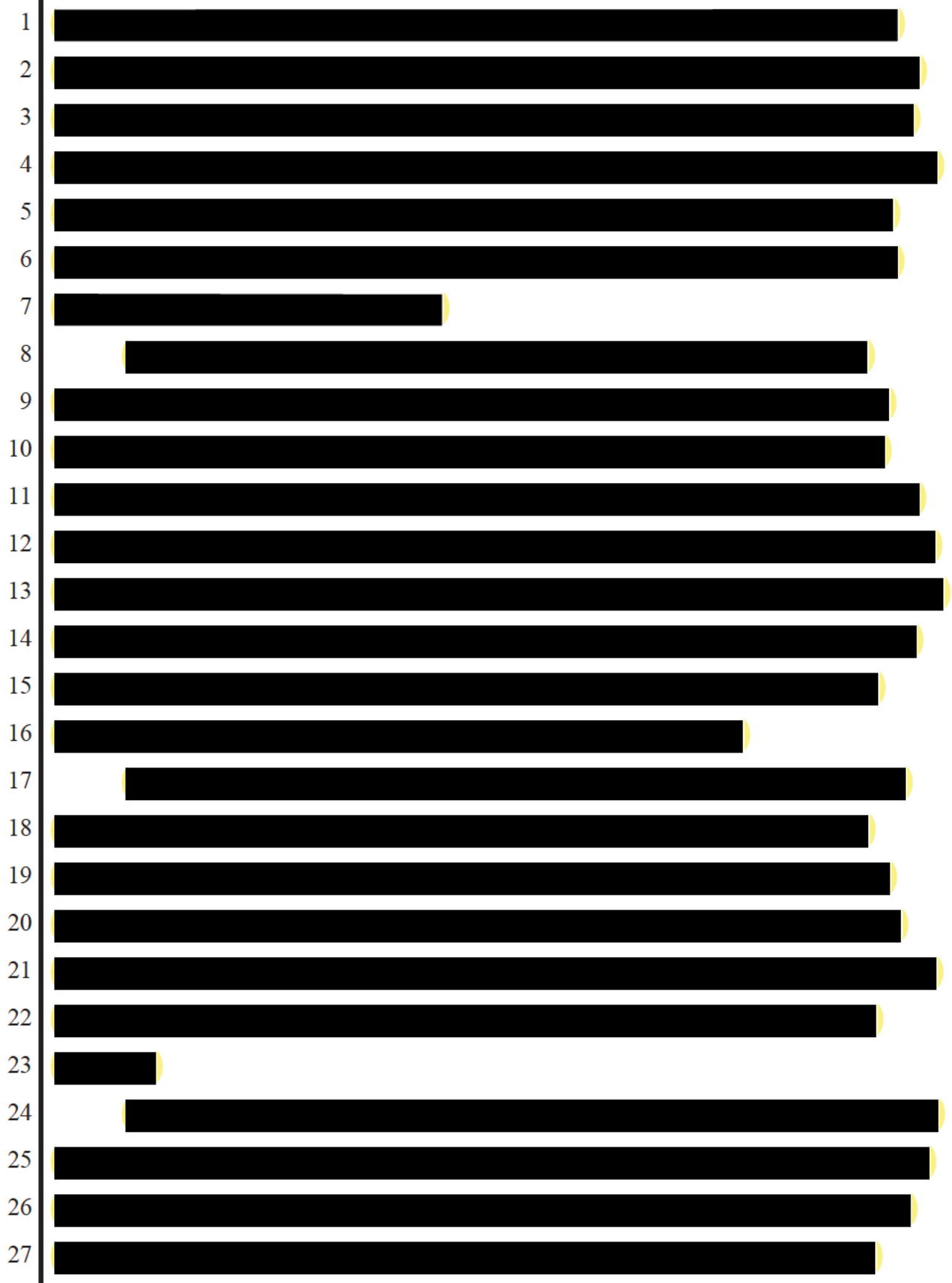


[6] Third Amended Complaint, ¶ 11.









[redacted]

B. *Georgia-Pacific* Factors

If Space Data's expert determines reasonable royalty damages under a hypothetical negotiation approach, Space Data may rely on the *Georgia-Pacific* factors, which have been found to be relevant to a calculation of a reasonable royalty both in the patent context, the trade secret context, and breach of NDA:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.

2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.

3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions to preserve that monopoly.

5. The commercial relationship between the licensor and the licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.

6. The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing value of the invention to the licensor as a generator of sales of his nonpatented items; and the extent of such derivative or convoyed sales.

7. The duration of the patent and the term of the license.

8. The established profitability of the product made under the patent; its commercial success; and its current popularity.

9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.

10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.

11. The extent to which the infringer has made use of the invention; and any

evidence probative of the value of that use.

12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.

13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

14. The opinion testimony of qualified experts.

15. The amount that a licensor (such as the patentee) and a license (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee—who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention—would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

Georgia-Pacific Factor 1. Space Data has never licensed any of the trade secrets or confidential information relevant to this matter.

Georgia-Pacific Factor 2. Existing licenses for comparable technology can inform a reasonable royalty in real-life royalty negotiations and in the determination of reasonable royalty damages in litigation. Google has not produced any comparable licenses to date. Space Data notes that Google has refused to produce information relevant to the value of technologies with comparable applications to Space Data's products and Loon (e.g. Skybox Imaging acquisition and sale data).

Georgia-Pacific Factor 3. Expert analysis as to the scope of the license has not yet been completed.

Georgia-Pacific Factor 4. A licensor with an established policy of refusing to grant licenses to competitors may be able to receive a higher royalty rate than a licensor that routinely grants licenses. As discussed above, Space Data has **not** licensed its trade secrets or confidential information to third parties. The fact that Space Data does not license, but sells its own services, would increase the royalty rate as compared with an entity that licenses its technology. This is particularly true when licensing to a direct competitor, Google here.

Georgia-Pacific Factor 5. As described above in response to Interrogatory No. 6,

Space Data and Google are direct competitors in the balloon-based internet service market.

Georgia-Pacific Factor 6. [redacted]. Google's advertising segment brought in over $79 billion in 2016 (about 88% of its total revenues).[7] Furthermore, as of October 2017, Google controlled nearly 87% of the worldwide desktop search engine market and over 94% of the mobile search engine market.[8] If Project Loon is able to provide internet access to the hundreds of millions of users that it intends to reach,[9] Google can reasonably expect significant contributions to its search revenues from those users. Loon is a strategic business for Google. In a reasonable royalty negotiation, the generation of additional revenues in addition to just sales of Loon would be an important consideration and benefit to Defendants from taking the hypothetical license. Thus, this factor would be expected to increase Google's willingness to pay and hence the reasonable royalty, possibly by a substantial amount.

Georgia-Pacific Factor 7. The date of the hypothetical negotiation would be the time Google first began misusing Space Data's confidential information and trade secrets. Expert technical analysis is expected for this factor and has not yet been completed.

Georgia-Pacific Factor 8. See response to Interrogatory 6 and content above regarding Google's anticipated profits. *See also* GOOG-SD-0073474 – 544 at 510 [redacted]

[7] "Annual Report for the fiscal year ended December 31, 2016," Alphabet Inc., February 3, 2017, p. 24, available at https://abc.xyz/investor/pdf/20161231_alphabet_10K.pdf, accessed January 23, 2018.
[8] "Worldwide desktop market share of leading search engines from January 2010 to October 2017," *Statista*, November 2017, available at https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/, accessed January 24, 2018; "Market share of selected leading mobile search providers in the United States from October 2012 to October 2017," *Statista*, November 2017, available at https://www.statista.com/statistics/511358/market-share-mobile-search-usa/, accessed January 24, 2018.
[9] Third Amended Complaint, ¶15.

[redacted]

Georgia-Pacific Factor 9. As a general matter, there are ways other than using balloon-based technology to provide Internet service, including terrestrial networks using cable or phone networks, and wireless networks through satellite arrays.[10] However, many of these traditional methods are not economically viable in rural and remote regions. Terrestrial networks and satellites are extremely expensive and are only cost-effective when they cover densely populated regions.[11] Companies like Facebook have invested significant resources to provide internet access using drones and laser technology.[12] Google also experimented with drones with its January 2014 purchase of Titan Aerospace, which produces high-flying solar-powered drones.[13] At that time, it appeared that Google wanted to develop an alternative to the balloon-powered internet services that it had already begun to develop with Project Loon. However, Alphabet shuttered Titan in 2016, reassigning some of the former Titan staff members to Project Loon[14] because Project Loon was considered "more promising" in terms of economics and technical feasibility than using drones.[15]

One of the reason's that Google began to explore drones as an alternative Internet

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[10] Third Amended Complaint, ¶¶ 28-33.
[11] Third Amended Complaint, ¶¶ 29-33
[12] Hempel, Jessi, "Inside Facebook's Ambitious Plan to Connect the Whole World," *Wired*, January 19, 2016, available at https://www.wired.com/2016/01/facebook-zuckerberg-internet-org/, accessed January 23, 2018.
[13] "Google to acquire drone-maker Titan Aerospace," USA Today, available at https://www.usatoday.com/story/tech/2014/04/14/google-to-acquire-drone-maker-titan-aerospace-facebook-aced/7706513, accessed on June 13, 2017; "Google Buys Titan Aerospace," UAS Vision, available at https://www.uasvision.com/2014/04/16/google-buys-titan-aerospace, accessed on June 13, 2017.
[14] "Google sends Titan broadband drones to the unicorns' graveyard," The Register, available at https://www.theregister.co.uk/2017/01/12/google_sends_titan_broadband_drones_to_the_unicorns_graveyard, accessed on June 12, 2017.
[15] "Alphabet ended drone Internet project, saying economics didn't work out," arsTechnica, available at https://arstechnica.com/information-technology/2017/01/alphabet-axed-internet-drones-says-balloon-broadband-is-more-promising, accessed on June 13, 2017; "Alphabet ended drone Internet project, saying economics didn't work out," *ars TECHNICA*, available at https://arstechnica.com/information-technology/2017/01/alphabet-axed-internet-drones-says-balloon-broadband-is-more-promising/.

provider was that balloons "[were] larger and harder to control," and drones were viewed as easier to put into and keep inside target coverage areas.[16] Comparing the technical and economic aspects of Project Loon to existing alternatives and similar emerging technologies is a basic step in formulating and executing the spinoff and such plans leading up to it. As Space Data's trade secrets and confidential information provided key knowledge to Google in developing Loon, this factor would increase Google's willingness to pay as well as the reasonably royalty calculations for the patents-at-issue.

Georgia-Pacific Factor 10. [redacted] The benefits from Project Loon, however, are not only limited to Google's cash flow gains. With the help of the Space Data's proprietary information, Loon would be able to provide internet service to areas with no access to internet and to places with internet services interrupted due to a natural disaster.

[redacted]

[16] "Google Buys Titan Aerospace," UAS Vision, available at https://www.uasvision.com/2014/04/16/google-buys-titan-aerospace, accessed on June 13, 2017.
[17] GOOG-SD-00072892-913 at 897.
[18] GOOG-SD-00073545-615 at 563.
[19] GOOG-SD-00073545-615 at 564-5.
[20] GOOG-SD-00073545-615 at 563.
[21] GOOG-SD-0073755-811 at 760.

the world. There are clear benefits, especially for underdeveloped countries, to be gained from increased connectivity. An analysis by Deloitte shows that extending internet access in developing economies to the level of developed nations can "raise living standards and incomes by up to $600 per person a year" and "[lift] 160 million people out of extreme poverty."[22] Reaching 90% of the world population with wireless service could also "provide over $22 trillion of GDP growth by 2030" and provide 120 million jobs.[23]

The great promise of Project Loon, enabled by Space Data's proprietary technology and information, would tend to increase Google's willingness to pay as well as the reasonable royalty for the patents at issue.

Georgia–Pacific Factor 11. Google improperly made use of Space Data's confidential information and trade secrets for purposes of Project Loon, in contravention of the NDA. *See* Response to Interrogatory No. 14.

Georgia–Pacific Factor 12. [redacted]

Georgia-Pacific Factor 13. The portion of the realizable profit that should be credited to the invention as distinguished from non-Space Data confidential and trade secret elements calls for apportionment. Space Data intends to rely on the analysis of technical experts and damages experts in order to perform an apportionment analysis.

Georgia-Pacific Factor 14. The opinions of technical experts are necessary in order

[22] "Google internet balloons and drones could boost GDP by trillions and save millions of lives," nextBIGfuture, available at https://www.nextbigfuture.com/2014/12/google-internet-balloons-and-drones.html, accessed on May 24, 2017.

[23] "Google internet balloons and drones could boost GDP by trillions and save millions of lives," nextBIGfuture, available at https://www.nextbigfuture.com/2014/12/google-internet-balloons-and-drones.html, accessed on May 24, 2017.

provide technical knowledge, background, and assumptions that will be used to supplement and guide any analyses of damages. To date, no technical expert has conducted any analysis or offered any opinions on the technical matters related to this case. As such, further technical expert opinion is required.

4. Injunctive Relief

The NDA explicitly provides that: "Each Party acknowledges that damages for improper disclosure of Confidential Information may be irreparable; therefore, the injured Party is entitled to seek equitable relief, including injunction and preliminary injunction, in addition to all remedies available to it."

Several factors weigh in favor of an injunction here.

Factor 1: Irreparable Injury

Google's continued misuse of Space Data's confidential information and trade secrets gives it an unfair advantage in the marketplace. Courts have found irreparable harm when a defendant's misappropriation allows it to gain a competitive edge in a nascent or fast-growing market, like balloon-based internet services here. Damage to reputation can be hard to quantify, as can price erosion, but that does not mean the irreparable injury does not occur. Space Data will continue to suffer significant damage to its goodwill if Loon continues to be allowed to compete using Space Data's own technology.

Here, Space Data is very much a practicing entity, its principal business (in fact its only business) centers on balloon-borne internet and communication systems; and Google Loon competes directly with Space Data, including in the domestic United States. It has an office and manufacturing facility in Chandler, Arizona. It has the ability to scale-up its manufacturing and indeed has done so to meet high demand in the past. Space Data has, in the past 4 years, been in commercial negotiations with and provided commercial demonstrations for [redacted] and has had commercial discussions with [redacted] as well. *See* SD_825887-888; SD_825899-803; SD_825908; SD_825910-911; SD_825921-923; SD_825741-743; SD_825972-973; SD_825747-750; SD_825744-746;

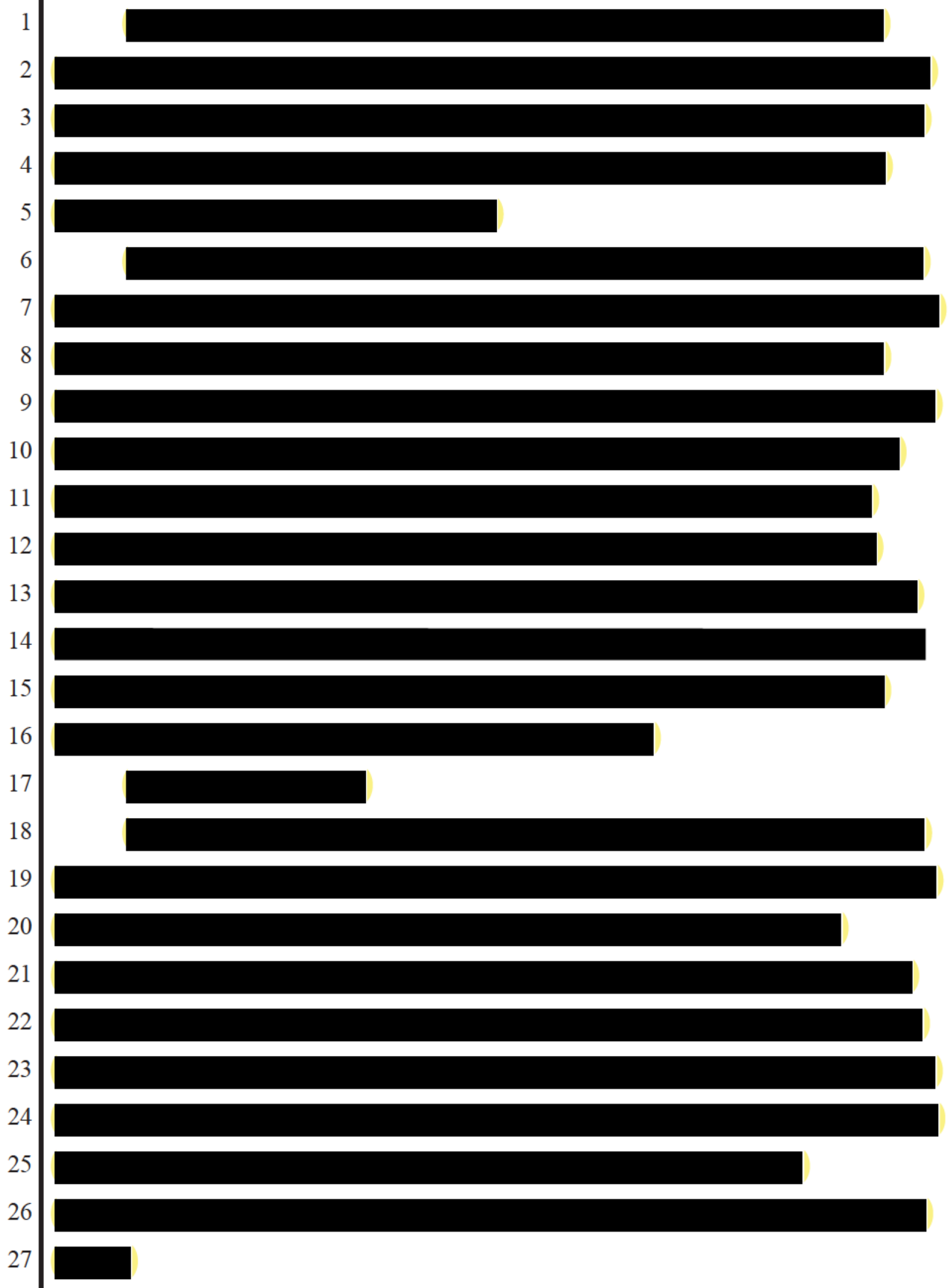
SD_825949-951; SD_825941-945; SD_825929-933; SD_825924-928; SD_825946-948; SD_825934-940; SD_825912-914; SD_826017-020; SD_825884; SD_825909; SD_825979-981; SD_825777-782; SD_825789; SD_825783-788; SD_825766-776; SD_825982-987; SD_825988-990; SD_825991-995; SD_825996-; SD_825997-6001; SD_826002-007; SD_826008; SD_826009-012; SD_826013; SD_826014-015; SD_.825896-898; SD_825885-886; SD_825903-904; SD_825899-902; SD_825893-895; SD_825891-892; SD_825905-906.

Space Data has also marketed its high altitude balloon system for wide-area disaster communications since 2001, as its technology offers a quick way to deploy coverage to an area affected by natural disasters or other emergencies in less than 30 minutes. *See* SD_521364-382; SD_825919. Over the past few years, Space Data has been in conversations with [redacted] to collaborate [redacted] a project which is exploring ways to establish broadband coverage for emergency first responders or to restore or expand networks after a disaster. *See* SD_825908; SD_825910-911; SD_825970-971. Space Data also has historically been and remains a major partner of the U.S. Department of Defense in providing remote voice, wireless internet, and imagining services.

Space Data has raised over $75 million in private capital to fund the development of its technology and business. From 2007 through 2017, Space Data generated total income of over [redacted], with gross profits of nearly [redacted]. Ever since Loon made its public debut in 2013, Space Data has had to compete against Google for customers, all while Google gets to take the benefit of Space Data's patented technology and proprietary trade secrets. Google operates in the same market areas as Space Data and engages in negotiations with the same domestic carriers and government divisions. Space Data has been hamstrung in its ability to close deals since Loon's arrival. *See also* Response to Interrogatory 6.

In particular, Space Data lost out to Google in a bid to provide wireless coverage to Puerto Rico following Hurricane Maria in 2017. While the was a humanitarian project, the benefits to the company winning the bid went well beyond good P.R. about charitable efforts. The Loon Puerto Rico trial allowed Google to prove that Loon works and redounded

worldwide recognition for Google. All of it built on Space Data's patents and trade secrets. The Puerto Rico trial put Google on the map in a way that Space Data cannot counter. Google is such a large player in the global market, it clouds out Space Data's ability to gain commercial traction.



There are many other illustrations along the same lines. The critical point is this: absent an injunction, Space Data will suffer irreparable, critical damage. Space Data is an operating company, and it is entitled to the right to the monopoly granted by the patent laws and the benefit of its proprietary, secret know-how. It must have the right to exclude Google, just as the law contemplates.

Here, there is a clear causal nexus between Defendants' misappropriation of trade secrets and breach of the NDA and the harm resulting from Defendants' unfair head-start in bringing Loon to market. This is because the Space Data's confidential information and trade secrets – its wind data trade secrets especially- are key to optimizing the function of a balloon-based communication system to work with existing, broadband devices. Using Space Data's proprietary knowledge, in contravention of the NDA, gave Google an unearned

head start and helped Google avoid millions in costs in their efforts to establish a commercially-viable network.

Factor 2: Inadequate Remedies at Law

Space Data has never licensed its technology, has a business to protect, including its business reputation, its reputation for inventiveness, its pricing curves, and the like. The same reasons supporting the fact that Space Data will suffer irreparable harm support a finding that monetary damages are an inadequate remedy here. Courts have found that the showing of a head-start advantage based on improper use of a competitor's technology is sufficient to establish that harm to the plaintiff cannot be remedied by money damages alone. *See Netlist Inc. v. Diablo Techs Inc.*, No. 13-cv-05962-YGR 2015 WL 153724, at *8 (N.D. Cal. Jan. 12, 2105). The head-start gained by Google has already done significant damage to Space Data and should not be allowed to continue.

Factor 3: The Balance of Equities

Where, as here, Space Data has invested years of time and tens of millions of dollars in developing its confidential information and trade secrets, it is profoundly inequitable to effectively "acquire" all of that knowhow without payment to Space Data and position itself as a direct competitor. To put this in context here, if Google can compete with Space Data directly, using Space Data's own patented technology, trade secrets, and confidential information, then Google will have an enormous competitive advantage, given its unlimited wealth, lobbying connections, and the fear it commands given its ability to retaliate against smaller competitors selling competing products. There is a reason, for example, that the EU just levied a multibillion dollar fine against Google. Another important factor here is whether the Defendant knowingly built its business in contradiction of the IP rights of others, as Google did here. The balance of hardships favors Space Data. While Google may face some cost in being enjoined from making, selling, or using Loon, that is the price a company pays when it builds its business on an information it misappropriates. On the other hand,

Space Data continues to suffer severe hardship by being forced to compete against its own trade secrets and patented technology.

Factor 4: The Public Interest

Finally, the public interest is enhanced by a court entering a permanent injunction is circumstances such as these. Any other rule would encourage a much larger competitor to cannibalize its much smaller competitors, even though the smaller competitors are often the source of valuable innovation in the marketplace generally. Why invest in innovation when a Google can simply get a smaller company to reveal its proprietary information under NDA, breach the NDA and use the proprietary information and trade secrets for Google's own projects – claiming the projects were developed organically at Google -- and then pay a mere small royalty as it runs its competitor out of business? That is hardly equitable. There is also a strong public interest in protecting intellectual property rights.

See also Responses to Interrogatories 6, 7, 8, and 16.

INTERROGATORY NO. 16:

Describe in detail the types of damages to which you contend you are entitled as relief for your claim of breach of the NDA.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because, amongst other things, "types of damages" renders it vague, ambiguous and overly broad. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Space Data further objects to this request as premature to the extent it seeks information that is the subject of expert discovery, as Plaintiff intends to rely on expert assistance in performing damages computations. Space Data also objects to this interrogatory to the extent it seeks trade secret, confidential, or proprietary information of a third party, sensitive personal or private

information of a third party, or sensitive government information. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

Space Data suffered damage as a direct and proximate result of Defendants' breaches of the NDA. Assuming that Google had performed on the NDA (*i.e.* had kept Space Data's confidential information and trade secrets secret and not used the information in contravention to the purpose of the NDA), Space Data would not have to be competing with Loon while Google used Space Data's own technology. Space Data would not have lost out on potential profits to Loon if Google had not usurped Space Data's confidential information out right. *See* July 10, 2018 Amended Response to Interrogatory No. 6. The injury suffered by Space Data includes, without limitation, the loss of sales and profits it would have earned but for Defendants' actions, and injury to Space Data's reputation among potential and existing customers, business partners, investors, and in the industry in general.

The calculation of Space Data's damages for Google's breach may include, without limitation, loss of profits Space Data would have earned but for Google's breach, disgorgement for unjust enrichment by the Defendants, payment of reasonable royalty fees, as well as injunctive relief. Space Data also seeks pre-judgment and post-judgment interest on the damages caused to them by reason of Defendants' conduct at the maximum legal rates provided by statute or law and an award for its costs and disbursements in this civil action, including reasonable attorneys' fees.

1. Lost Profits

Google benefitted from breaching the NDA by, among other things, using Space Data's proprietary technical and financial data on how to establish and run an optimal balloon-based network, saving Google the substantial costs it would have had to occur to

develop that information on its own. This helped Google advance it time to market and keep it competitive. Space Data is entitled to the difference in profits between the actual and the so-called "but-for" world absent Google's breach of the NDA. Plaintiff should be awarded its lost profits as a result of the breach if the breach caused it to lose sales, to receive a lower price or margin on sales than it otherwise would have received (so-called "price erosion"), or to incur costs that it otherwise would not have incurred.

Space Data was and remains a fully operating business. It has an office and manufacturing facility in Chandler, Arizona. It has the ability to scale-up its manufacturing process manufacture and indeed has done so to meet high demand in the past. Space Data has, in the past 4 years, been in commercial negotiations with and provided commercial demonstrations for [redacted] and has had commercial discussions with [redacted] as well. *See* SD_825887-888; SD_825899-803; SD_825908; SD_825910-911; SD_825921-923; SD_825741-743; SD_825972-973; SD_825747-750; SD_825744-746; SD_825949-951; SD_825941-945; SD_825929-933; SD_825924-928; SD_825946-948; SD_825934-940; SD_825912-914; SD_826017-020; SD_825884; SD_825909; SD_825979-981; SD_825777-782; SD_825789; SD_825783-788; SD_825766-776; SD_825982-987; SD_825988-990; SD_825991-995; SD_825996-; SD_825997-6001; SD_826002-007; SD_826008; SD_826009-012; SD_826013; SD_826014-015; SD_.825896-898; SD_825885-886; SD_825903-904; SD_825899-902; SD_825893-895; SD_825891-892; SD_825905-906.

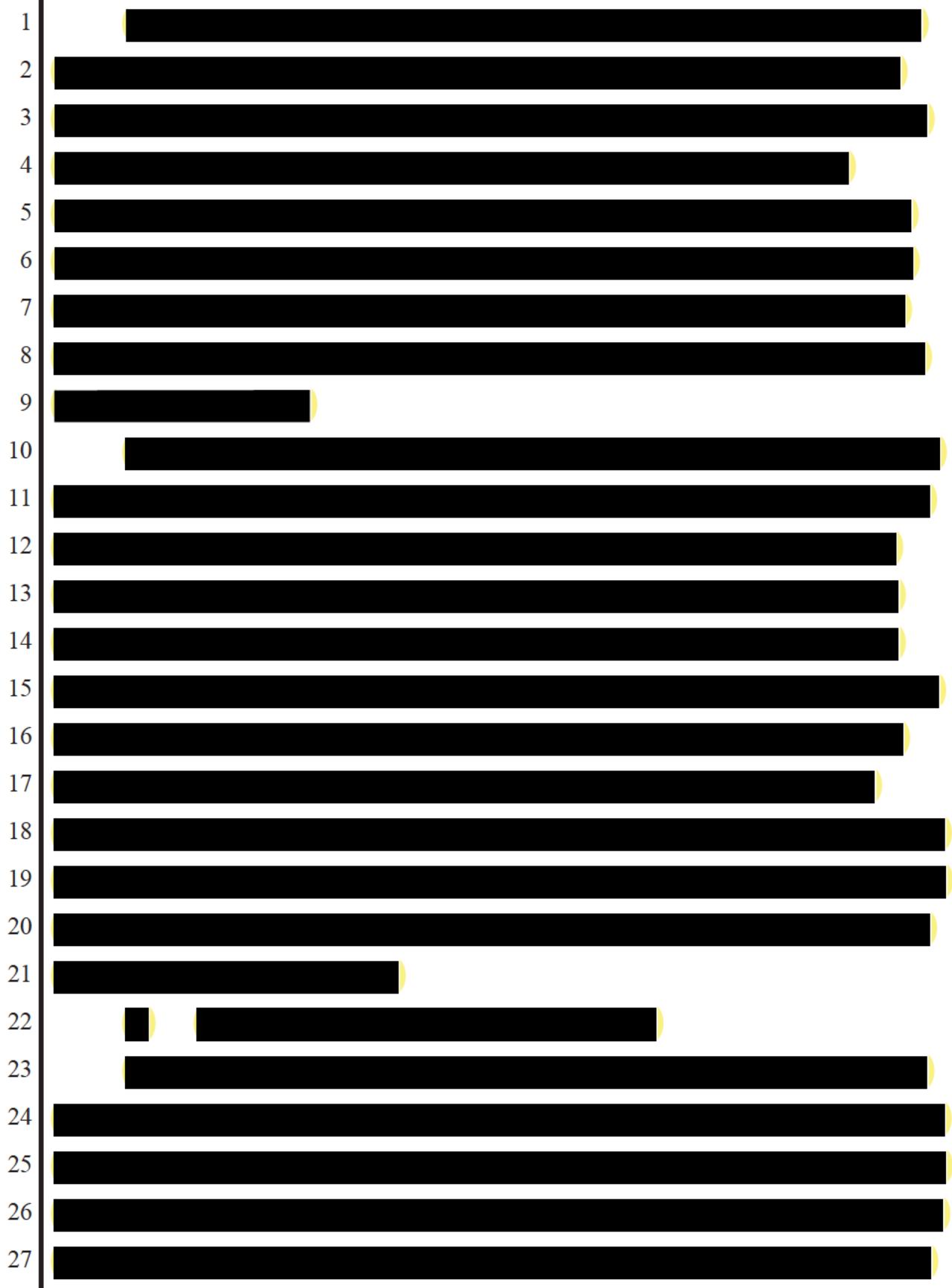
Space Data has also marketed its high altitude balloon system for wide-area disaster communications since 2001, as its technology offers a quick way to deploy coverage to an area affected by natural disasters or other emergencies in less than 30 minutes. *See* SD_521364-382; SD_825919. Over the past few years, Space Data has been in conversations with [redacted] to collaborate [redacted] a project which is exploring ways to establish broadband coverage for emergency first responders or to restore or expand networks after a disaster. *See* SD_825908; SD_825910-911; SD_825970-971. These are two areas Google has solidly set its sights on.

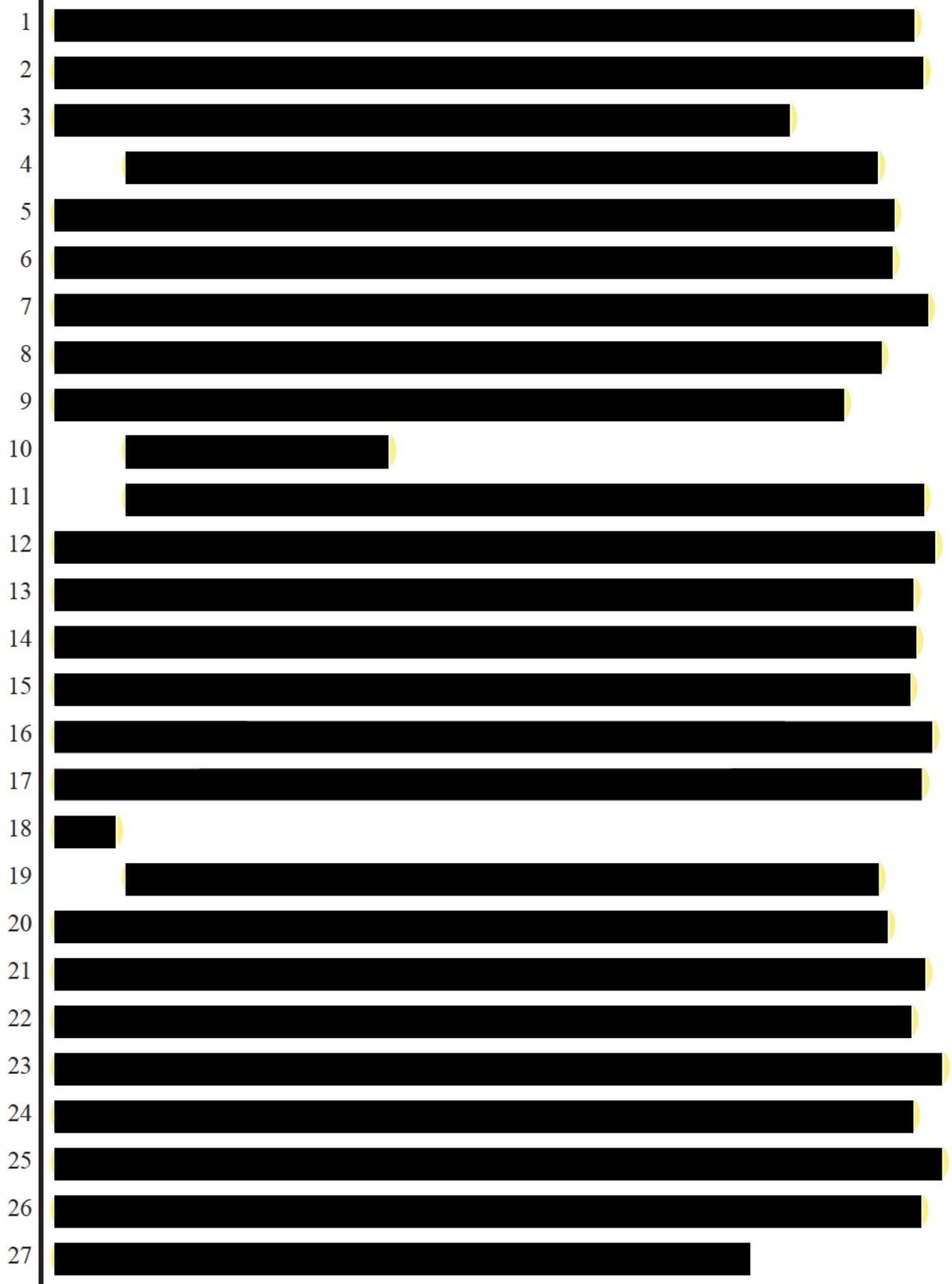
Space Data has raised over $75 million in private capital to fund the development of its technology and business.[24] From 2007 through 2017, Space Data generated total income of over [redacted], with gross profits of nearly [redacted].[25] However, after Google's initial public launch of Project Loon in June 2013[26], Space Data's annual revenues decreased substantially for several years before rebounding slightly in 2017.[27]

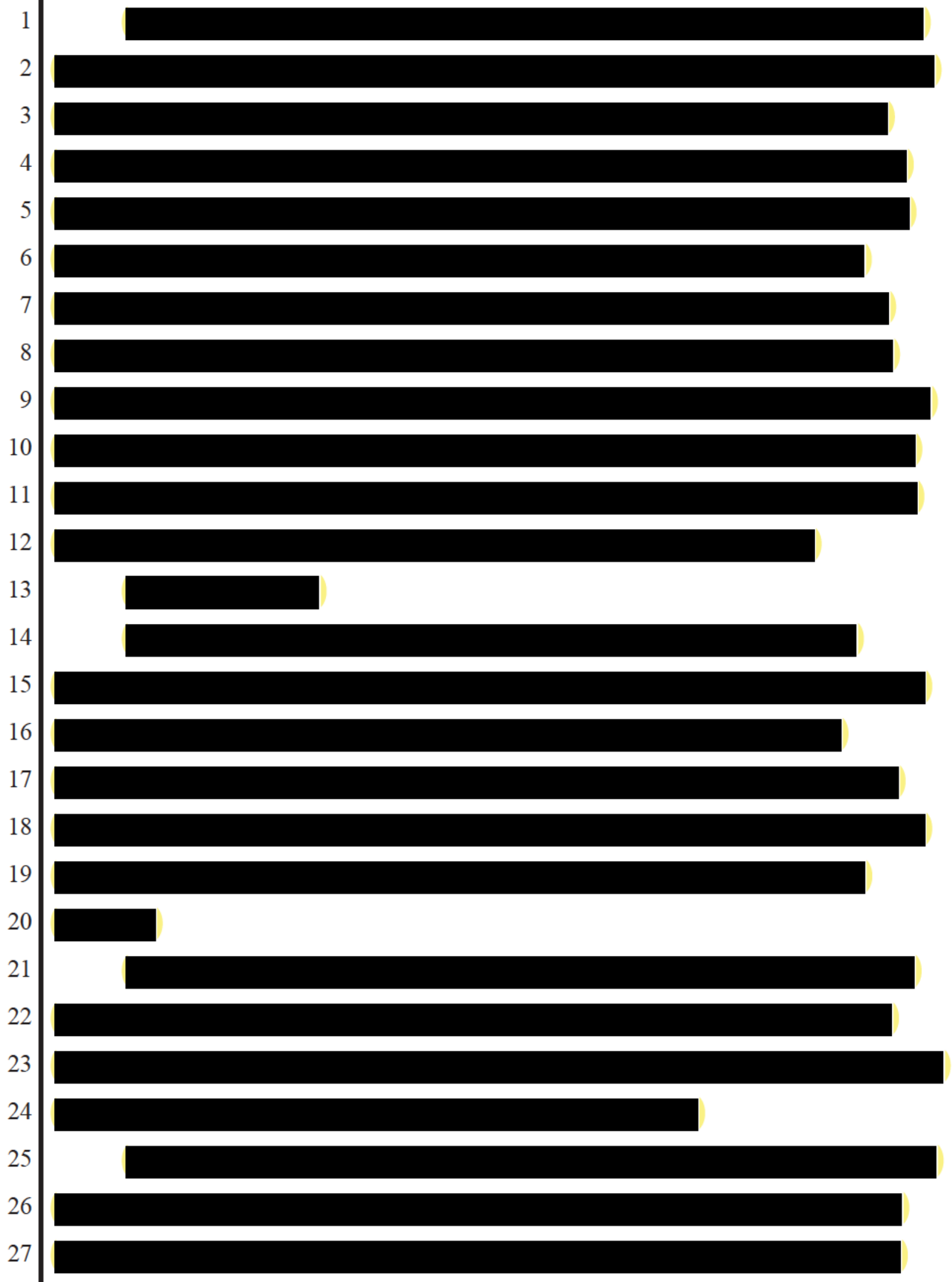
In order to calculate Space Data's lost sales, a first step is to consider Google's projects to determine whether competition from Google hindered Space Data's ability to compete and/or win the project.

[redacted]

[24] "Investors," *Space Data*, available at https://www.spacedata.net/company/investors/, accessed January 30, 2018.
[25] Profit & Loss: January 2007 through December 2017, Space Data Corporation, January 31, 2018. (SDC PL 10 yrs.pdf)
[26] Third Amended Complaint, ¶ 224.; Vanian, Jonathan, "New Lawsuit May Deflate Google's Big Internet Balloon Project," *Fortune*, June 16, 2016, available at http://fortune.com/2016/06/15/google-sued-project-loon-balloon-project/, accessed January 26, 2018.
[27] Profit & Loss: January 2007 through December 2017, Space Data Corporation, January 31, 2018. (SDC PL 10 yrs.pdf).







[redacted]

E. "Graduation"

As noted above, Google intends to roll out Loon as its own separate company and has performed key analyses of Loon's profitability in making that decision.

Loon started as a part of "X," the research lab at Google charged with nurturing "world-changing" ideas, and growing those ideas into commercial businesses. One of the more well-known X projects involves Google's autonomous car driving technology. This project was incubated at X, and known by the code name as "Chauffeur." After determining such project was likely to be self-sustaining and enormously profitable, "Chauffeur" was rolled out into a freestanding company, Waymo. Several have written that Waymo may have a market valuation in excess of $50 billion, all without having a penny in revenue.

Google refers to the process of maturing a technology out of X and into a separate freestanding corporate entity as "Graduation" or "Alphabetization." To Graduate, the technology must be proven, the commercial success tangible (known in Google as "steady-state"), and the business must be able to function independently. These are the requisite benchmarks for a X project to graduate into a freestanding company.

Google (Alphabet) graduated Loon as of July 1, 2018. [redacted]

[redacted]

G. Competition

As described above, ever since Loon made its public debut in 2013, Space Data has had to compete against Google for customers, all while Google gets to take the benefit of Space Data's patented technology and proprietary trade secrets. Google operates in the same market areas as Space Data and engages in negotiations with the same domestic carriers and government divisions. Space Data has been hamstrung in its ability to close deals since Loon's arrival and the effective loss of its competitive patent advantage.

Further, the fact that Google's '678 patent was deemed to be rightfully Space Data's during the Interference Proceeding is additional evidence supporting the fact that Google Loon and Space Data are "close competitors." *See Presido Components Inc v. Am. Technical Ceramics Corp.*, 702 F. 3d 1351, 1365 (Fed. Cir. 2012). Even Google itself called Space Data a competitor when internally discussing the Puerto Rico project and Space Data's granting permission to use its spectrum for humanitarian purposes. *See* GOOG-SD-00076931 ("So this is truly an example of the entire industry rallying together, from the regulatory authorities, to telcos, to competitors, to help people who desperately need connectivity.").

2. Unjust Enrichment

Defendants were unjustly enriched by getting the benefit of Space Data's confidential, proprietary information without compensating Space Data at all. Google got the benefit of the tens of millions of dollars and 200,000 flight hours poured into Space Data, and

never paid Space Data a penny. It soaked up the information Space Data shared under NDA, and then used it for its own purposes to jumpstart Project Loon.

The doctrine of unjust enrichment is an equitable principle based on the idea that one party should not be able to unjustly enrich itself at the expense of another. The principle of unjust enrichment goes beyond merely restoring what a plaintiff actually lost. Defendant was unjustly enriched if its misappropriation of plaintiff's trade secrets caused Defendants to receive a benefit that it otherwise would not have achieved. A party acting in conscious disregard of the rights of another should be required to disgorge all profit in order to benefit the injured party and deter the perpetrator from committing unlawful acts again. Here, not only did Space Data not get the benefit of the NDA bargain (Google keeping Space Data's information confidential and using it only to evaluate a potential acquisition), Google has also misused Space Data's information for its own profit.

Another potential way of measuring unjust enrichment is the entire enterprise or acquisition value of a Space Data. Where there is substantial evidence a defendant would have acquired plaintiff if it had not chosen to misappropriate plaintiff's trade secrets instead, acquisition value may be an appropriate measure. *See X-It Products, LLC v Walter Kidde Portable Equipment, Inc.*, 227 F. Supp. 2d 494 (E.D. Va. 2002). Here, instead of acquiring Space Data's intellectual property through a purchase of the company (or license), Google simply took what it wanted. The quantum of those damages-whether considered as damages for trade secret misappropriation or Defendants' use of Space Data's information in breach of the parties' NDA- is what Defendants would have paid in a legitimate acquisition of Space Data.

Another measure of unjust enrichment to Defendants is the expected cost savings to Defendants from using Space Data's trade secrets in Defendants' Google Loon. Due to the misappropriation of Space Data's trade secrets, Defendants will benefit from many years of future cost savings due to employing Space Data's trade secrets in Google Loon's systems. Google avoided millions of dollars in cost in not having to experiment with flying balloons at

different altitudes to determine the best place to position them to sail with the winds, the quality of the winds in the [redacted]: it already had that information from Space Data. Google didn't need to do its own research to determine that [redacted] for insulation at altitude or the best way to address thermal management concerns at 65,000 feet: it already knew that from Space Data. Google also didn't have to expend extra time and money on its own hover algorithm, it could start from the knowledge Space Data shared with it. The same is true for Google's Mission Control and financial modeling, all of it could be advanced by *years* based on starting with the information Space Data provided to Google under the guise of Google's interest in an acquisition.

Another measure of unjust enrichment to Defendants is the expected cost savings due to reduced development expenses from using Space Data's trade secrets in Defendants' Google Loon systems. One way to measure the costs that Defendants saved through their misappropriation of Space Data's trade secrets is by looking at the costs that Space Data incurred to develop those trade secrets. *See also* Response to Interrogatory No. 7.

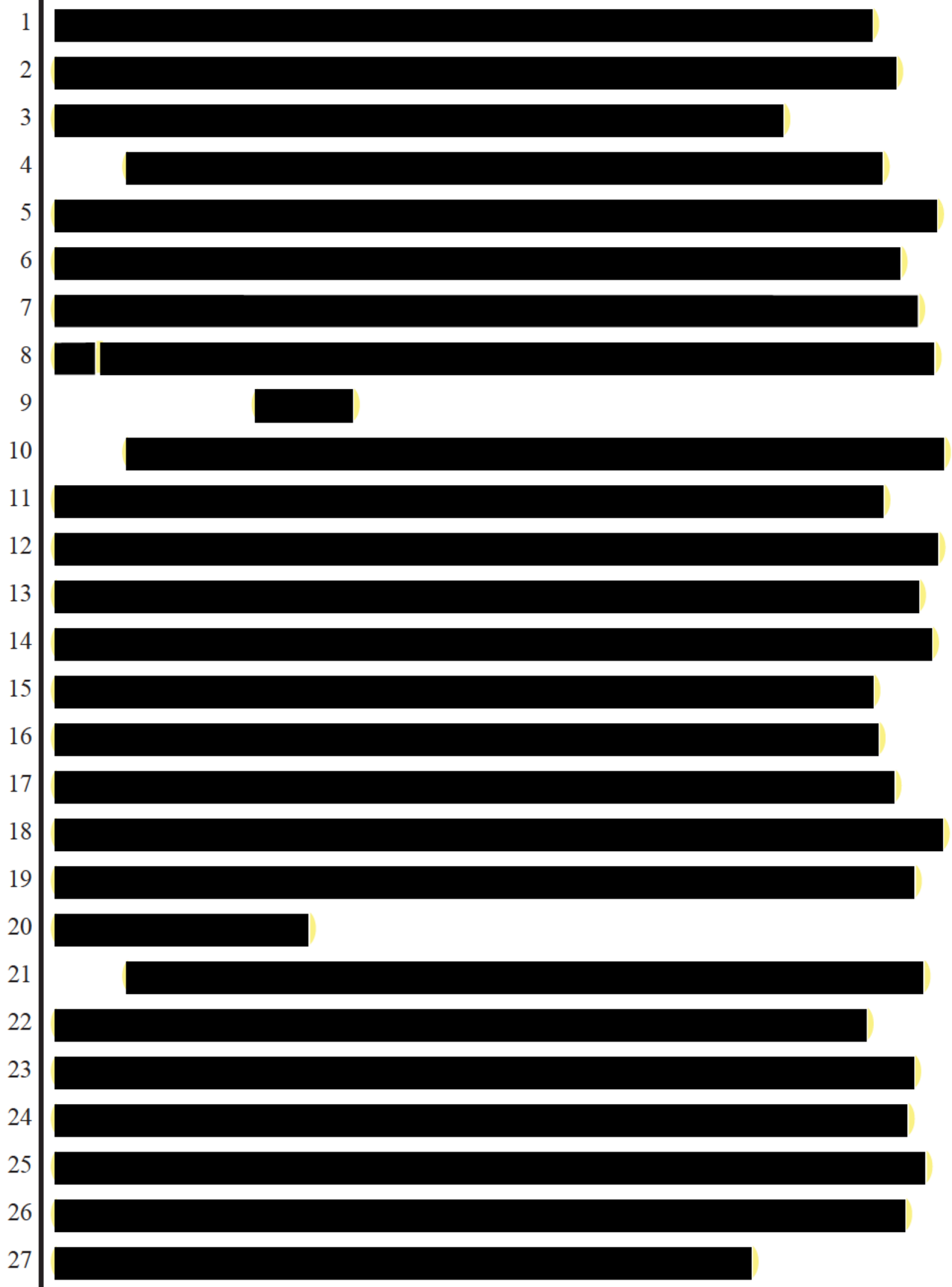
3. Reasonable Royalty

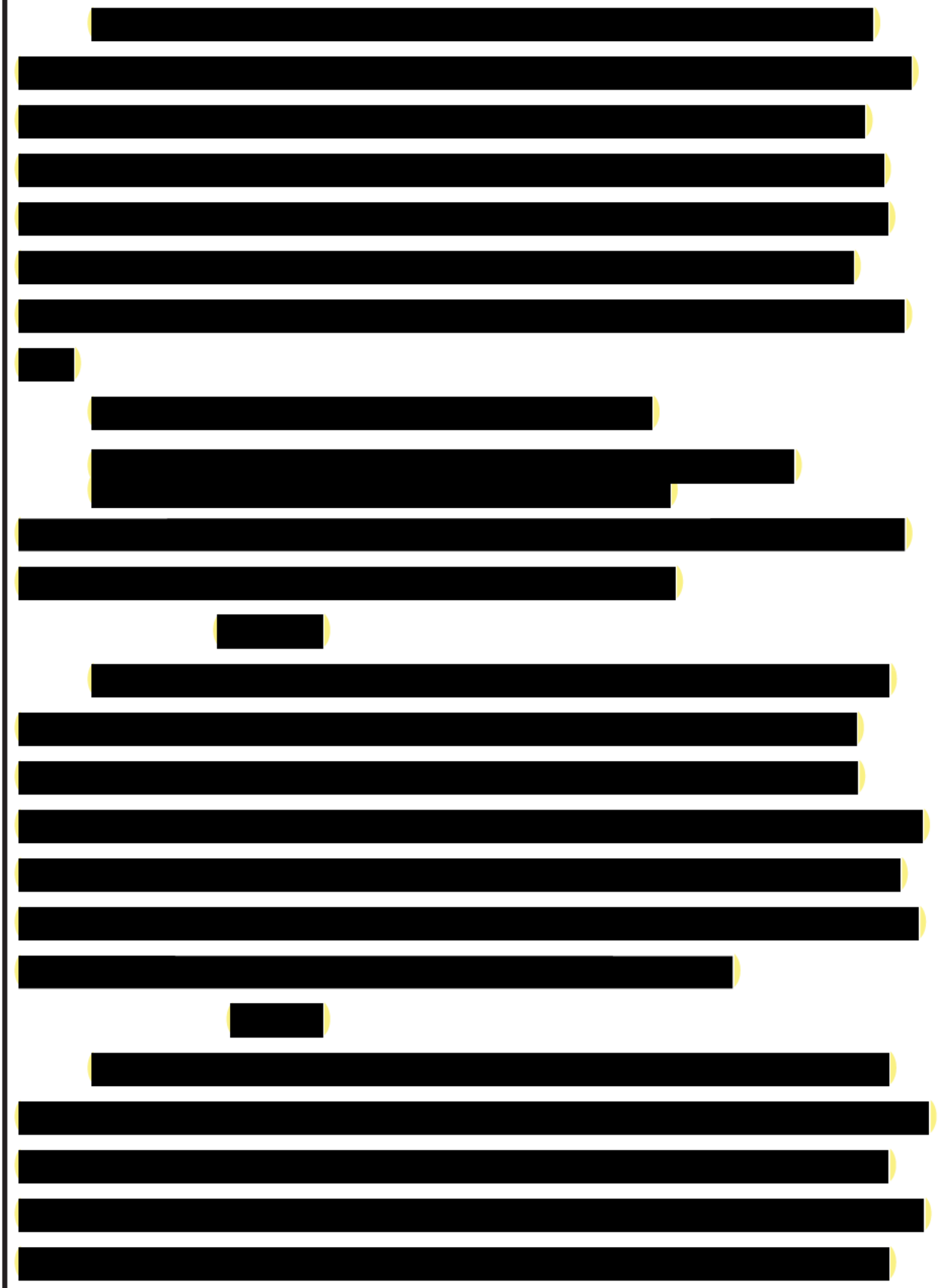
Damages may also be measured by a reasonable royalty in a manner similar to the method used to value trade secret damage and patent damages. There are different methodologies for calculating reasonable royalties which may be applicable to damages in this matter, namely, a Georgia-Pacific approach, an "analytical" approach, a cost saving approach, and a comparables approach.

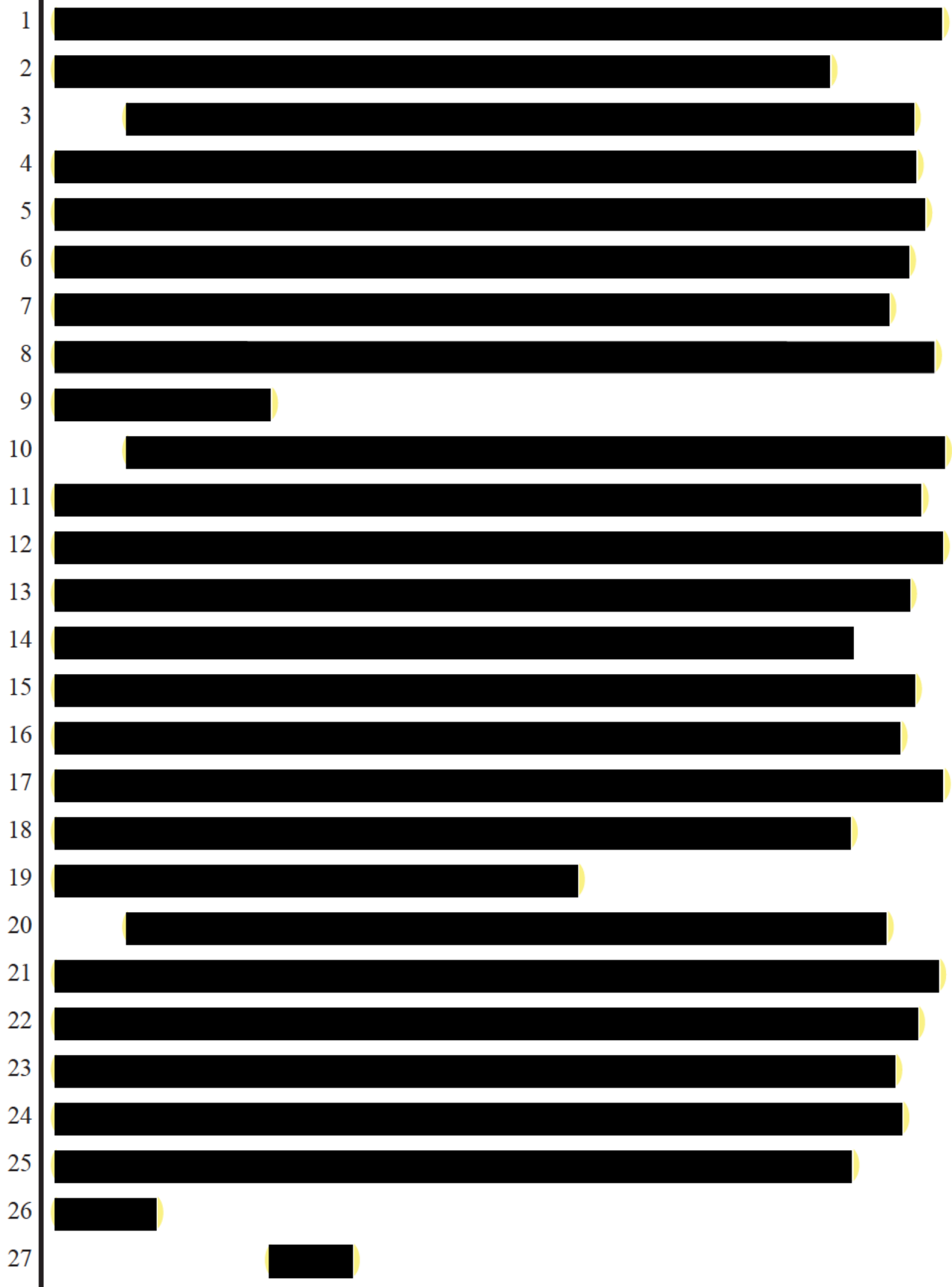
Properly constructed, the hypothetical negotiation reflects the relevant expectations and market factors that would have affected a real-world licensing negotiation. Even though there are no profits from the Google Loon yet, Google expects robust profits in the future and this expectation would inform a hypothetical negotiation and drive Google's willingness to

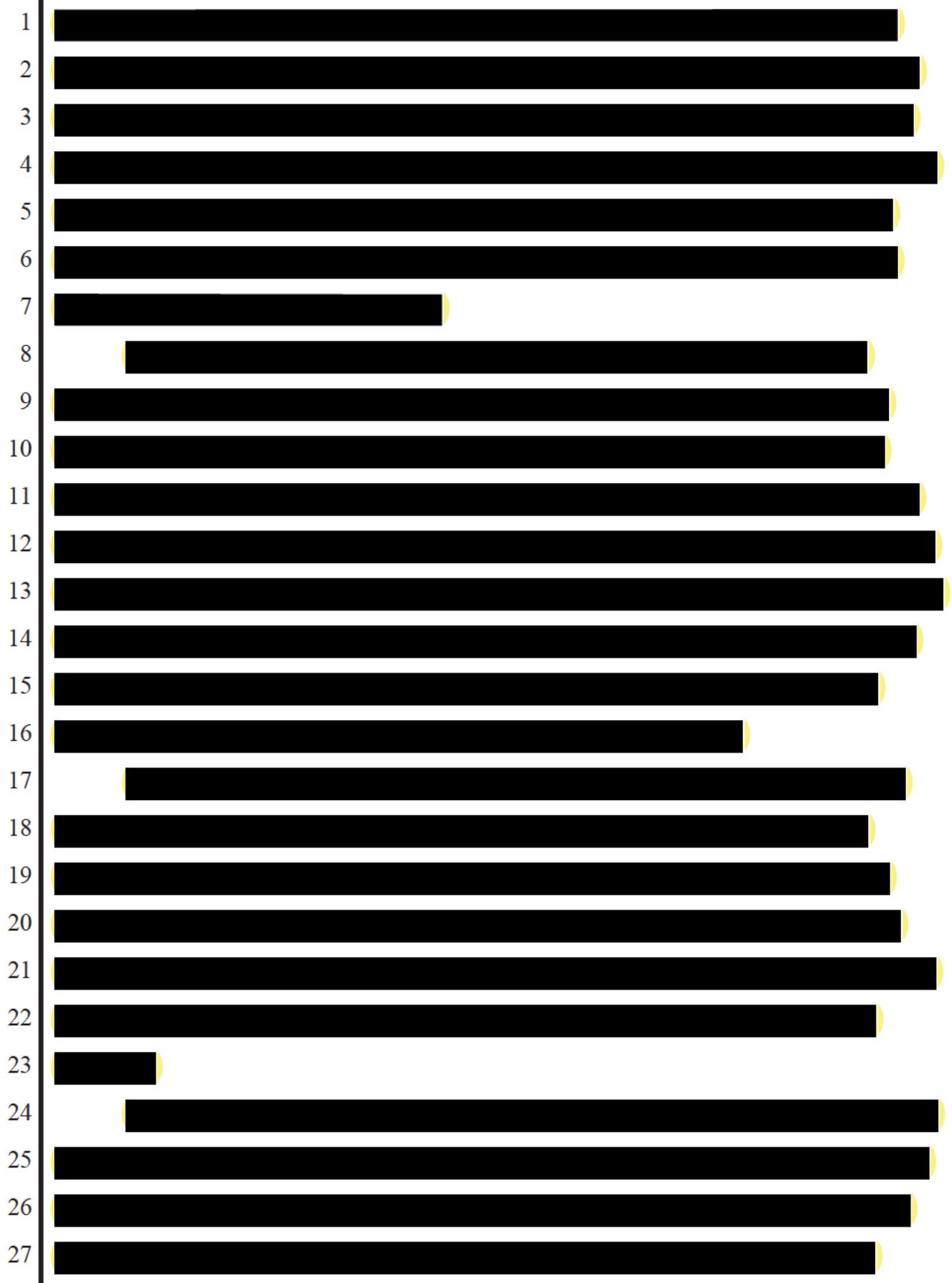
pay. Ever since Google publicly announced Project Loon in mid-2013[28], it has produced several internal projections for revenue from and profitability of the project. [redacted]

[28] Third Amended Complaint, ¶ 11.









[redacted]

B. *Georgia-Pacific* Factors

If Space Data's expert determines reasonable royalty damages under a hypothetical negotiation approach, Space Data may rely on the *Georgia-Pacific* factors, which have been found to be relevant to a calculation of a reasonable royalty both in the patent context, the trade secret context, and breach of NDA:

16. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.

17. The rates paid by the licensee for the use of other patents comparable to the patent in suit.

18. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

19. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions to preserve that monopoly.

20. The commercial relationship between the licensor and the licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.

21. The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing value of the invention to the licensor as a generator of sales of his nonpatented items; and the extent of such derivative or convoyed sales.

22. The duration of the patent and the term of the license.

23. The established profitability of the product made under the patent; its commercial success; and its current popularity.

24. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.

25. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.

26. The extent to which the infringer has made use of the invention; and any

evidence probative of the value of that use.

27. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.

28. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

29. The opinion testimony of qualified experts.

30. The amount that a licensor (such as the patentee) and a license (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee—who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention—would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

Georgia-Pacific Factor 1. Space Data has never licensed any of the trade secrets or confidential information relevant to this matter.

Georgia-Pacific Factor 2. Existing licenses for comparable technology can inform a reasonable royalty in real-life royalty negotiations and in the determination of reasonable royalty damages in litigation. Google has not produced any comparable licenses to date. Space Data notes that Google has refused to produce information relevant to the value of technologies with comparable applications to Space Data's products and Loon (e.g. Skybox Imaging acquisition and sale data).

Georgia-Pacific Factor 3. Expert analysis as to the scope of the license has not yet been completed.

Georgia-Pacific Factor 4. A licensor with an established policy of refusing to grant licenses to competitors may be able to receive a higher royalty rate than a licensor that routinely grants licenses. As discussed above, Space Data has **not** licensed its trade secrets or confidential information to third parties. The fact that Space Data does not license, but sells its own services, would increase the royalty rate as compared with an entity that licenses its technology. This is particularly true when licensing to a direct competitor, Google here.

Georgia-Pacific Factor 5. As described above in response to Interrogatory No. 6,

Space Data and Google are direct competitors in the balloon-based internet service market.

Georgia-Pacific Factor 6. [redacted]. Google's advertising segment brought in over $79 billion in 2016 (about 88% of its total revenues).[29] Furthermore, as of October 2017, Google controlled nearly 87% of the worldwide desktop search engine market and over 94% of the mobile search engine market.[30] If Project Loon is able to provide internet access to the hundreds of millions of users that it intends to reach,[31] Google can reasonably expect significant contributions to its search revenues from those users. Loon is a strategic business for Google. In a reasonable royalty negotiation, the generation of additional revenues in addition to just sales of Loon would be an important consideration and benefit to Defendants from taking the hypothetical license. Thus, this factor would be expected to increase Google's willingness to pay and hence the reasonable royalty, possibly by a substantial amount.

Georgia-Pacific Factor 7. The date of the hypothetical negotiation would be the time Google first began misusing Space Data's confidential information and trade secrets. Expert technical analysis is expected for this factor and has not yet been completed.

Georgia-Pacific Factor 8. [redacted]

[29] "Annual Report for the fiscal year ended December 31, 2016," Alphabet Inc., February 3, 2017, p. 24, available at https://abc.xyz/investor/pdf/20161231_alphabet_10K.pdf, accessed January 23, 2018.

[30] "Worldwide desktop market share of leading search engines from January 2010 to October 2017," *Statista*, November 2017, available at https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/, accessed January 24, 2018; "Market share of selected leading mobile search providers in the United States from October 2012 to October 2017," *Statista*, November 2017, available at https://www.statista.com/statistics/511358/market-share-mobile-search-usa/, accessed January 24, 2018.

[31] Third Amended Complaint, ¶15.

[redacted]

Georgia-Pacific Factor 9. As a general matter, there are ways other than using balloon-based technology to provide Internet service, including terrestrial networks using cable or phone networks, and wireless networks through satellite arrays.[32] However, many of these traditional methods are not economically viable in rural and remote regions. Terrestrial networks and satellites are extremely expensive and are only cost-effective when they cover densely populated regions.[33] Companies like Facebook have invested significant resources to provide internet access using drones and laser technology.[34] Google also experimented with drones with its January 2014 purchase of Titan Aerospace, which produces high-flying solar-powered drones.[35] At that time, it appeared that Google wanted to develop an alternative to the balloon-powered internet services that it had already begun to develop with Project Loon. However, Alphabet shuttered Titan in 2016, reassigning some of the former Titan staff members to Project Loon[36] because Project Loon was considered "more promising" in terms of economics and technical feasibility than using drones.[37]

One of the reason's that Google began to explore drones as an alternative Internet

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[32] Third Amended Complaint, ¶¶ 28-33.
[33] Third Amended Complaint, ¶¶ 29-33
[34] Hempel, Jessi, "Inside Facebook's Ambitious Plan to Connect the Whole World," *Wired*, January 19, 2016, available at https://www.wired.com/2016/01/facebook-zuckerberg-internet-org/, accessed January 23, 2018.
[35] "Google to acquire drone-maker Titan Aerospace," USA Today, available at https://www.usatoday.com/story/tech/2014/04/14/google-to-acquire-drone-maker-titan-aerospace-facebook-aced/7706513, accessed on June 13, 2017; "Google Buys Titan Aerospace," UAS Vision, available at https://www.uasvision.com/2014/04/16/google-buys-titan-aerospace, accessed on June 13, 2017.
[36] "Google sends Titan broadband drones to the unicorns' graveyard," The Register, available at https://www.theregister.co.uk/2017/01/12/google_sends_titan_broadband_drones_to_the_unicorns_graveyard, accessed on June 12, 2017.
[37] "Alphabet ended drone Internet project, saying economics didn't work out," arsTechnica, available at https://arstechnica.com/information-technology/2017/01/alphabet-axed-internet-drones-says-balloon-broadband-is-more-promising, accessed on June 13, 2017; "Alphabet ended drone Internet project, saying economics didn't work out," *ars TECHNICA*, available at https://arstechnica.com/information-technology/2017/01/alphabet-axed-internet-drones-says-balloon-broadband-is-more-promising/.

provider was that balloons "[were] larger and harder to control," and drones were viewed as easier to put into and keep inside target coverage areas.[38] Comparing the technical and economic aspects of Project Loon to existing alternatives and similar emerging technologies is a basic step in formulating and executing the spinoff and such plans leading up to it. As Space Data's trade secrets and confidential information provided key knowledge to Google in developing Loon, this factor would increase Google's willingness to pay as well as the reasonably royalty calculations for the patents-at-issue.

Georgia-Pacific Factor 10. [redacted].[39] The benefits from Project Loon, however, are not only limited to Google's cash flow gains. With the help of the Space Data's proprietary information, Loon would be able to provide internet service to areas with no access to internet and to places with internet services interrupted due to a natural disaster.

[redacted]

[38] "Google Buys Titan Aerospace," UAS Vision, available at https://www.uasvision.com/2014/04/16/google-buys-titan-aerospace, accessed on June 13, 2017.
[39] GOOG-SD-00072892-913 at 897.
[40] GOOG-SD-00073545-615 at 563.
[41] GOOG-SD-00073545-615 at 564-5.
[42] GOOG-SD-00073545-615 at 563.
[43] GOOG-SD-0073755-811 at 760.

the world. There are clear benefits, especially for underdeveloped countries, to be gained from increased connectivity. An analysis by Deloitte shows that extending internet access in developing economies to the level of developed nations can "raise living standards and incomes by up to $600 per person a year" and "[lift] 160 million people out of extreme poverty."[44] Reaching 90% of the world population with wireless service could also "provide over $22 trillion of GDP growth by 2030" and provide 120 million jobs.[45]

The great promise of Project Loon, enabled by Space Data's proprietary technology and information, would tend to increase Google's willingness to pay as well as the reasonable royalty for the patents at issue.

Georgia–Pacific Factor 11. Google improperly made use of Space Data's confidential information and trade secrets for purposes of Project Loon, in contravention of the NDA. *See* Response to Interrogatory No. 14.

Georgia–Pacific Factor 12. [redacted]

Georgia-Pacific Factor 13. The portion of the realizable profit that should be credited to the invention as distinguished from non-Space Data confidential and trade secret elements calls for apportionment. Space Data intends to rely on the analysis of technical experts and damages experts in order to perform an apportionment analysis.

Georgia-Pacific Factor 14. The opinions of technical experts are necessary in order

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[44] "Google internet balloons and drones could boost GDP by trillions and save millions of lives," nextBIGfuture, available at https://www.nextbigfuture.com/2014/12/google-internet-balloons-and-drones.html, accessed on May 24, 2017.

[45] "Google internet balloons and drones could boost GDP by trillions and save millions of lives," nextBIGfuture, available at https://www.nextbigfuture.com/2014/12/google-internet-balloons-and-drones.html, accessed on May 24, 2017.

provide technical knowledge, background, and assumptions that will be used to supplement and guide any analyses of damages. To date, no technical expert has conducted any analysis or offered any opinions on the technical matters related to this case. As such, further technical expert opinion is required.

4. Injunctive Relief

The NDA explicitly provides that: "Each Party acknowledges that damages for improper disclosure of Confidential Information may be irreparable; therefore, the injured Party is entitled to seek equitable relief, including injunction and preliminary injunction, in addition to all remedies available to it."

Several factors weigh in favor of an injunction here.

Factor 1: Irreparable Injury

Google's continued misuse of Space Data's confidential information and trade secrets gives it an unfair advantage in the marketplace. Courts have found irreparable harm when a defendant's misappropriation allows it to gain a competitive edge in a nascent or fast-growing market, like balloon-based internet services here. Damage to reputation can be hard to quantify, as can price erosion, but that does not mean the irreparable injury does not occur. Space Data will continue to suffer significant damage to its goodwill if Loon continues to be allowed to compete using Space Data's own technology.

Here, Space Data is very much a practicing entity, its principal business (in fact its only business) centers on balloon-borne internet and communication systems; and Google Loon competes directly with Space Data, including in the domestic United States. It has an office and manufacturing facility in Chandler, Arizona. It has the ability to scale-up its manufacturing and indeed has done so to meet high demand in the past. Space Data has, in the past 4 years, been in commercial negotiations with and provided commercial demonstrations for [redacted] and has had commercial discussions with [redacted] as well. *See* SD_825887-888; SD_825899-803; SD_825908; SD_825910-911; SD_825921-923; SD_825741-743; SD_825972-973; SD_825747-750; SD_825744-746;

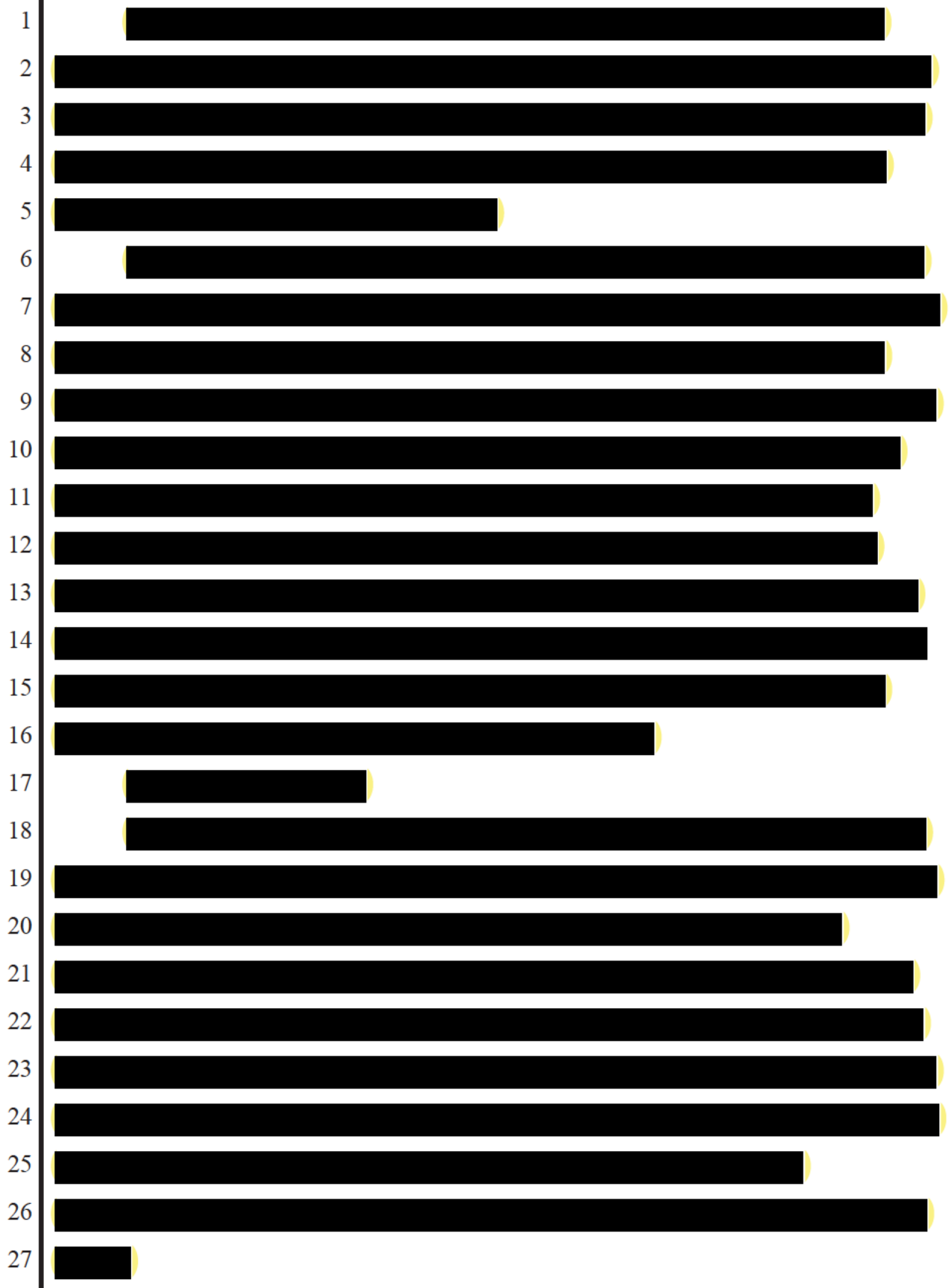
SD_825949-951; SD_825941-945; SD_825929-933; SD_825924-928; SD_825946-948; SD_825934-940; SD_825912-914; SD_826017-020; SD_825884; SD_825909; SD_825979-981; SD_825777-782; SD_825789; SD_825783-788; SD_825766-776; SD_825982-987; SD_825988-990; SD_825991-995; SD_825996-; SD_825997-6001; SD_826002-007; SD_826008; SD_826009-012; SD_826013; SD_826014-015; SD_.825896-898; SD_825885-886; SD_825903-904; SD_825899-902; SD_825893-895; SD_825891-892; SD_825905-906.

Space Data has also marketed its high altitude balloon system for wide-area disaster communications since 2001, as its technology offers a quick way to deploy coverage to an area affected by natural disasters or other emergencies in less than 30 minutes. *See* SD_521364-382; SD_825919. Over the past few years, Space Data has been in conversations with [redacted] to collaborate [redacted] a project which is exploring ways to establish broadband coverage for emergency first responders or to restore or expand networks after a disaster. *See* SD_825908; SD_825910-911; SD_825970-971. Space Data also has historically been and remains a major partner of the U.S. Department of Defense in providing remote voice, wireless internet, and imagining services.

Space Data has raised over $75 million in private capital to fund the development of its technology and business. From 2007 through 2017, Space Data generated total income of over [redacted], with gross profits of nearly [redacted]. Ever since Loon made its public debut in 2013, Space Data has had to compete against Google for customers, all while Google gets to take the benefit of Space Data's patented technology and proprietary trade secrets. Google operates in the same market areas as Space Data and engages in negotiations with the same domestic carriers and government divisions. Space Data has been hamstrung in its ability to close deals since Loon's arrival. *See also* Response to Interrogatory 6.

In particular, Space Data lost out to Google in a bid to provide wireless coverage to Puerto Rico following Hurricane Maria in 2017. While the was a humanitarian project, the benefits to the company winning the bid went well beyond good P.R. about charitable efforts. The Loon Puerto Rico trial allowed Google to prove that Loon works and redounded

worldwide recognition for Google. All of it built on Space Data's patents and trade secrets. The Puerto Rico trial put Google on the map in a way that Space Data cannot counter. Google is such a large player in the global market, it clouds out Space Data's ability to gain commercial traction.



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There are many other illustrations along the same lines. The critical point is this: absent an injunction, Space Data will suffer irreparable, critical damage. Space Data is an operating company, and it is entitled to the right to the monopoly granted by the patent laws and the benefit of its proprietary, secret know-how. It must have the right to exclude Google, just as the law contemplates.

Here, there is a clear causal nexus between Defendants' misappropriation of trade secrets and breach of the NDA and the harm resulting from Defendants' unfair head-start in bringing Loon to market. This is because the Space Data's confidential information and trade secrets – its wind data trade secrets especially- are key to optimizing the function of a balloon-based communication system to work with existing, broadband devices. Using Space Data's proprietary knowledge, in contravention of the NDA, gave Google an unearned

head start and helped Google avoid millions in costs in their efforts to establish a commercially-viable network.

Factor 2: Inadequate Remedies at Law

Space Data has never licensed its technology, has a business to protect, including its business reputation, its reputation for inventiveness, its pricing curves, and the like. The same reasons supporting the fact that Space Data will suffer irreparable harm support a finding that monetary damages are an inadequate remedy here. Courts have found that the showing of a head-start advantage based on improper use of a competitor's technology is sufficient to establish that harm to the plaintiff cannot be remedied by money damages alone. *See Netlist Inc. v. Diablo Techs Inc.*, No. 13-cv-05962-YGR 2015 WL 153724, at *8 (N.D. Cal. Jan. 12, 2105). The head-start gained by Google has already done significant damage to Space Data and should not be allowed to continue.

Factor 3: The Balance of Equities

Where, as here, Space Data has invested years of time and tens of millions of dollars in developing its confidential information and trade secrets, it is profoundly inequitable to effectively "acquire" all of that knowhow without payment to Space Data and position itself as a direct competitor. To put this in context here, if Google can compete with Space Data directly, using Space Data's own patented technology, trade secrets, and confidential information, then Google will have an enormous competitive advantage, given its unlimited wealth, lobbying connections, and the fear it commands given its ability to retaliate against smaller competitors selling competing products. There is a reason, for example, that the EU just levied a multibillion dollar fine against Google. Another important factor here is whether the Defendant knowingly built its business in contradiction of the IP rights of others, as Google did here. The balance of hardships favors Space Data. While Google may face some cost in being enjoined from making, selling, or using Loon, that is the price a company pays when it builds its business on an information it misappropriates. On the other hand,

Space Data continues to suffer severe hardship by being forced to compete against its own trade secrets and patented technology.

Factor 4: The Public Interest

Finally, the public interest is enhanced by a court entering a permanent injunction is circumstances such as these. Any other rule would encourage a much larger competitor to cannibalize its much smaller competitors, even though the smaller competitors are often the source of valuable innovation in the marketplace generally. Why invest in innovation when a Google can simply get a smaller company to reveal its proprietary information under NDA, breach the NDA and use the proprietary information and trade secrets for Google's own projects – claiming the projects were developed organically at Google -- and then pay a mere small royalty as it runs its competitor out of business? That is hardly equitable. There is also a strong public interest in protecting intellectual property rights.

See also Responses to Interrogatories 6, 7, 8, 15 and 17.

INTERROGATORY NO. 17:

State all facts and identify all documents that support your claim for damages for breach of the NDA.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because amongst other things, the request's reference to "all facts" and "all documents" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data also objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Plaintiff objects to this request as premature as Plaintiff intends to rely on

expert assistance in performing damages computations and expert discovery has not yet begun. Space Data also objects to this interrogatory to the extent it seeks trade secret, confidential, or proprietary information of a third party, sensitive personal or private information of a third party, or sensitive government information. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

See Response to Interrogatory No. 16, above. *See also* Response to Interrogatory Nos. 6, 7, 8 and 15.

INTERROGATORY NO. 19:

Separately for each Asserted Trade Secret, state all facts and identify all documents that support your contention that the Asserted Trade Secret is not generally known to the public or to other persons who can obtain economic value from its disclosure or use, and identify all persons with knowledge of such facts.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because amongst other things, the phrase "other persons who can obtain economic value from its disclosure or use" is vague and ambiguous, and the request's reference to "all facts"; "all documents"; and "all persons" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data also objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information

more easily available to Defendants, as through public sources. Space Data also objects to this interrogatory as premature, given that Space Data has not completed its investigation of facts, witnesses or documents relating to this case, has not completed discovery (for example, Defendants' response to Space Data's Interrogatory No. 25 is outstanding), has not completed analysis of available information, and has not completed preparation for trial. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

Space Data's trade secrets are not generally known and are not readily ascertainable, and Space Data has not disclosed its trade secrets in its patents. *See* Responses to Interrogatory Nos. 13 and 16 (preservation of secrecy and damages); Fifth Amended 2019 Statement (Space Data's wind data trade secrets are not disclosed by Space Data's patents and explaining that by 2008 Space Data had cataloged over 200,000 flight hours of wind data [redacted] Third Amended Complaint, ¶¶298 & 307.

The fact that Google filed patent applications copying Space Data's technology proves that Google itself believed the ideas were not public; otherwise, Google could not have filed the applications it did.

Space Data had to painstakingly develop each and every one of its trade secrets on its own. That would not have been necessary if they had been "generally known" to the public or readily ascertainable. For example:

Hover Algorithm: Space Data had to do tests to see if it was even possible to [redacted] *See* Transcript of June 1, 2018 Deposition of Eric Frische ("Frische Tr.") at 37:5-16. Indeed, even one of Space Data's own engineer's was "adamant" that this could not be done. *Id.* It took Space Data "a long time to come to the algorithms" and "mechanical methods built into the vent." *Id.* at 229:10-230:6. The "mechanical ballast

design" was critical as well. *Id.* at 230:7-24. Ballast and vent design required "[l]ots of calculations," "chamber tests" and "over a span of a year" of work. *Id.* at 231:2-232:11.

The design of the components of the vent and ballast system itself and choices about the materials used for those comments required a great deal of design effort and R&D by Space Data. *See, e.g.*, Transcript of June 15, 2018 30(b)(6) Deposition of Bill McCullough ("McCullough 30(b)(6) Tr.") at 14:14-16:19.

The design of the vent components alone took "on the order of a year and half to two years" and Space Data had to try "a lot of iterations." *Id.* at 32:20-33:25. Many iterations and changes were required to perfect the vent design shown to Google. *Id.* at 33:1-38:9. The cost of designing the vent was "nontrivial." *Id.* at 38:10-14. Nobody, prior to Space Data, vented latex balloons. *Id.* at 40:4-7. Space Data had to "start[ ] from scratch doing [its] own analyses, using [its] own materials." *Id.* at 41:24-25. "There [weren't] any textbooks that say[], This is how you vent . . ." *Id.* at 43:25-44:1.

Space Data also had to consider many different variations in designing its ballast components. It had to consider various types of ballast, including multiple types of liquid ballast and multiple types of solid ballast, "dozens of variations." *See id.* at 67:9-18'; 90:6-16; 92:16-93:12. It also had to consider multiple auger designs, with consequent impact on auger motor selection. *Id.* at 90:3-15. Its selection was made based on "empirical data"—in other words, Space Data had to fly and test various designs and components to refine the design it ultimately shared with Google on February 15, 2018. *Id.*; *see also id.* at 94:14-97:19.

Space Data designed its own hover algorithm. Transcript of June 27, 2018 30(b)(6) Deposition of David Coombs ("Coombs 30(b)(6) Tr.") at 16:14-15:6. The algorithm itself "was created by looking at past data acquired from manually venting and ballasting the balloon[s]." *Id.*; *see also id.* at 21:11-14. In other words, to even begin to deduce what was necessary for the algorithm, Space Data had to build balloons, fly many flights, track the data from those flights, collect that data, and then analyze it. *See, e.g., id.* at 23:21-24:5. This

data was not and is not available to the public. Nor was the hover algorithm a simple one-hour coding project. "The initial design . . . took several weeks and it was refined over a much longer period of time, perhaps years." *Id.* at 23:1-5.

Thermal Management: It took Space Data "a long time to get to the point where [it] could build a system that didn't require active thermal management" and it is justifiably "pretty proud of what [it] had to do to overcome the thermal" issues involved in high-altitude ballooning. Frische Tr. at 237:18-241:3. There was "a lot of R&D in terms of material choices" and design. Firsche Tr. at 242:17-244:12. It took Space Data a great deal of trial and error to get the thermal management design right. Frische Tr. at 244:13-245:3.

Process Flow for Space Data's Monitoring of its flight data that was on display during Google's February 2008 visit: This flow chart describes Space Data's process flow. It was unique to Space Data. *See* Frishce Tr. at 247:1-249:22.

See also Knoblach Dep., Jul. 11-12, 2018 (discussing development of Space Data trade secrets).

Discovery in this matter is ongoing and Space Data reserves the right to supplement this response in light of any new deposition testimony, expert testimony, or other newly discovered facts.

INTERROGATORY NO. 20:

Separately for each Asserted Trade Secret, state all facts and identify all documents that support your contention that the Asserted Trade Secret derives independent economic value, actual or potential, from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use and identify all persons with knowledge of such facts.

RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because amongst other things, the phrase "other persons who can obtain

economic value from its disclosure or use" is vague and ambiguous, and the request's reference to "all facts"; "all documents"; and "all persons" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data also objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Space Data also objects to this interrogatory as premature, given that Space Data has not completed its investigation of facts, witnesses or documents relating to this case, has not completed discovery, has not completed analysis of available information, and has not completed preparation for trial. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

Space Data's trade secrets derive independent economic value from not being generally known or readily ascertainable. Among other things, the independent economic value of Space Data's trade secrets is evidenced by the effort, including time and money, that Space Data put into painstakingly developing its trade secrets. *See* Response to Interrogatory No. 19; ECF 143-1 (Ritchie Dec.), ¶3 ("Space Data . . . has spent year, and tens of millions of dollars in private investment, developing its technology"); ECF 235-1 (Ritchie Dec.), ¶3; Quenneville Dep. at 177:21-23 ("Because it[(wind data) is] part of our intellectual property, and we have spent many dollars of company resources to get -- collect all that data and understand it.").

The independent economic value of Space Data's trade secrets is also evidenced by the extensive measures Space Data has taken to maintain the secrecy of its trade secrets over

the course of many years. *See* Response to Interrogatory No. 13. Clearly Space Data believes its trade secrets derive independent economic value from not being generally known or readily ascertainable.

The independent economic value of Space Data's trade secrets is further evidenced by Google's (and Space Data's) use of Space Data's trade secrets, and by Google's intensive acquisition due diligence of Space Data and its technology. *See* Response to Interrogatory No. 14 (discussing Google's use of Space Data's trade secrets and Google's acquisition due diligence). Google's intensive patent prosecution campaign with respect to stratospheric balloon technology also demonstrates the value of Space Data's trade secrets. *See* Yaghmour (Google 30(b)(6) designee on "[t]he value and importance of the 'more than 100 patents for its own Project Loon-related inventions' to the technical and economic success of Project Loon) Dep. (Rough) at 45:18-46:1 ("Q. . . . How many Project Loon patents does Google currently own . . . . A. I'm going to speculate about 400. Q. 400 Loon-specific patnets? . . . . The Witness: 400 global. Globally.")

The independent economic value of Space Data's trade secrets if further demonstrated by the competitive advantage Space Data derives from the secrecy of its trade secrets. *See* Fifth Amended 2019 Statement; ECF 143-1 (Ritchie Dec.), ¶7; ECF 235-1 (Ritchie Dec.), ¶6.

By way of further example, the independent economic value of Space Data's trade secrets is also demonstrated by the injury, including damages, Space Data has suffered as a result of Google's misappropriation. *See* Response to Interrogatory No. 16.

INTERROGATORY NO. 23:

Separately for each Asserted Trade Secret, state all facts and identify all documents that support your contention that you have been injured by Google's alleged misappropriation of the Trade Secret and identify all persons with knowledge of such facts.

AMENDED (07/13/2018) RESPONSE:

Space Data refers to and incorporates by reference each of the foregoing General Objections. In addition to the foregoing General Objections, Space Data specifically objects to this interrogatory because amongst other things, the request's reference to "all facts"; "all documents"; and "all persons" renders it overly broad, unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Space Data also objects to this request to the extent it includes subparts that should be propounded, numbered, or counted as separate interrogatories in accordance with Federal Rules of Civil Procedure 33. Space Data further objects to this interrogatory to the extent it seeks information within Defendants possession, custody and/or control, and/or information more easily available to Defendants, as through public sources. Plaintiff objects to this request as premature as intends to rely on expert assistance in performing damages computations and expert discovery has not yet begun. Space Data also objects to this interrogatory to the extent it seeks trade secret, confidential, or proprietary information of a third party, sensitive personal or private information of a third party, or sensitive government information. Space Data further objects to this interrogatory to the extent it seeks information, documents, and/or things protected by the attorney-client privilege, the work-product doctrine, or any other applicable privilege or immunity.

Subject to, and without waiver of, the foregoing General and Specific Objections, Space Data responds further as follows:

The parties entered into The Mutual Non-Disclosure Confidentiality and Nondisclosure Agreement ("NDA") effective as of December 1, 2007, for the purpose of engaging in "discussions and negotiations concerning a proposed acquisition of shares or assets" of Space Data. This was the only permissible use of the Space Data information.

Because Google told Space Data it was interested in acquiring the company and because the parties had executed the two-way NDA, Space Data provided Google with unprecedented access to confidential, proprietary information and trade secrets. Space Data felt Google's interest in acquiring the company was sincere, since Google co-founders Larry

Page and Sergey Brin both attended Space Data's first meeting at Google's headquarters in September 2007 and a follow-on meeting in November 2007. Then, on November 28, 2007, Minnie Ingersoll emailed Space Data and copied Mike Pearson from Google's corporate development team saying "I think he's the right person to help us take this discussion into more formal deal terms." *See* GOOG-SD-00144458. Once the NDA was signed, Space Data provided Google with its proprietary historical financial statements, financial projections, and modeling, which revealed information regarding all the relevant cost variables relevant to running a balloon-based communications network. Space Data's financial details are not publicly known and its financial model was proprietarily developed over years of operating as the only balloon-based communications company. Detail about the actual cost drivers of a balloon-based communications network, developed from Space Data's actual operational experience, provided value and a competitive advantage to Space Data. These details were only provided to Google for the purpose of evaluating a potential acquisition.

Space Data also provided proprietary "vision" slides to Google, which detailed different potential applications of Space Data's technology. These slides were also designated as confidential under the NDA. As described fully in the Third Amended Complaint, on February 15, 2008, a team of Google engineers, corporate development personnel, and Google's co-founders, Larry Page and Sergey Brin, came to visit Space Data to perform technical due diligence. Space Data had never before and has not since provided the kind of access Google had during that visit.

The Google team launched Space Data balloons and then received tours of Space Data's labs, workshops, and Network Operations Center ("NOC"). In the labs and workshops, Google was able to view and photograph deconstructed payloads and components. Throughout the tour, Space Data's team provided detail about Space Data's payload design, vent, ballast, and thermal management techniques that were on display. During the tour of the NOC, Space Data allowed Google to take up-close, detailed

photographs of the wind data, flight data, hover inputs and outputs, and NOC control system. Space Data also explained to Google, in technical detail, what was happening on each screen in the NOC, what the wind data was showing, and how all the information fit together. Space Data explained to Google that, based on its 200,000 flight hours of knowledge, Space Data had concluded that a stratospheric balloon array comprising balloons [redacted] could be flown to optimize communications with mainstream broadband devices based upon taking advantage of the layers of wind at different but appropriately consistent velocities [redacted] Space Data explained it had determined that many different altitude zones exist within the Peaceful Band and that Space Data's proprietary knowledge of the different velocities at those altitudes allows recently-launched balloons to be lifted to specific altitudes where the known wind velocity will transfer these balloons into [redacted] within the existing balloon array. This knowledge differed than what was in the public domain at the time and was key because, if only a few altitude zones are known with uncertain wind velocities, balloons cannot be maneuvered as precisely. The consequence being that [redacted] cannot be maintained.

Space Data also explained in detail to Google what was displayed on the NOC screens regarding the hover algorithm and how, in concert with the optimal design and placement of the vent and ballast system on display for Google, Space Data achieves and maintains hover. *See* also Response to Interrogatory No. 19.

Space Data would never have shared its core, technical knowhow, developed from hundreds of thousands of flight hours, if it thought Google would be permitted to use such information for its own purposes without any credit or payment to Space Data.

Google failed to treat Space Data's confidential information with the appropriate controls under the NDA from the beginning. On [insert date] Google

In 2011, when Google claims it was first starting to develop Loon internally, a member of the Loon team, Josh Weaver, emailed Dan McCloskey and Phil Gossett, two key members of

Google's due diligence team who visited Space Data on February 15, 2008, wanting to find out what the team learned from their view into Space Data. As Weaver put it then:

See GOOG-SD-00158448-451. Dan McCloskey, Larry Alder and Phil Gossett, each responded with substantive summaries of Google Space Data interactions. *See id.* This one example of cross-contamination between the Google Loon team and the Space Data due diligence team was not an isolated incident. *See generally* Response to Interrogatory No. 14.

Defendants improperly developed Google Loon based on Space Data's confidential and trade secret information, in breach of the NDA. Defendants' use of Space Data's proprietary financial modeling, historical financial data, vision slides, and information derived from access to Space Data's proprietary wind data, hover algorithm, thermal management system, altitude control system, and network operations center to develop Project Loon constitutes a breach of the NDA. Defendants' disclosure of certain Space Data's trade secrets and confidential information in Google's '193 Patent application as and asserted "ownership" of Space Data's intellectual property is also a breach of the NDA as it violates § 8, which states that "[no Party acquires any intellectual property rights under this Agreement[.] Google also breached the NDA by sharing proprietary, Space Data information with the entire Google Access group in contravention of the purpose of the NDA, which was to evaluate and acquisition or business partnership with Space Data.

Space Data suffered damage as a direct and proximate result of Defendants' breaches of the NDA. Assuming that Google had performed on the NDA (*i.e.* had kept Space Data's confidential information and trade secrets secret and not used the information in

contravention to the purpose of the NDA), Space Data would not have to be competing with Loon while Google used Space Data's own technology. Space Data would not have lost out on potential profits to Loon if Google had not usurped Space Data's confidential information out right. *See* July 10, 2018 Amended Response to Interrogatory No. 6. The injury suffered by Space Data includes, without limitation, the loss of sales and profits it would have earned but for Defendants' actions, and injury to Space Data's reputation among potential and existing customers, business partners, investors, and in the industry in general.

The calculation of Space Data's damages for Google's misappropriation of trade secrets may include, without limitation, loss of profits Space Data would have earned but for Google's misappropriation, disgorgement for unjust enrichment by the Defendants, payment of reasonable royalty fees, as well as injunctive relief.

Defendants' trade secrets misappropriation has been willful and malicious. "Willful" means that Defendants acted with a purpose or willingness to commit the act or engage in the conduct in question, and the conduct was not reasonable under the circumstances at the time and was not undertaken in good faith. "Malicious" means that Defendants acted with an intent to cause injury, or that Defendants conduct was despicable and was done with a willful and knowing disregard for the rights of others. If willful and malicious trade secret misappropriation exists, both CUTSA and DTSA allow punitive damages up to two times any damages award. Cal. Civil Code § 3426.3 and 18 U.S.C. § 1836(b)(3)(C). If willful and malicious misappropriation exists, CUTSA and DTSA also allow recovery of attorneys' fees and costs. *See* § 3426.4 and 18 U.S.C. § 1836(b)(3)(D). In addition to attorneys' fees, Space Data is also eligible to receive reasonable expert fees under CUTSA § 3426.4. Space Data also seeks pre-judgment and post-judgment interest on damages caused to them by reason of Defendants' misappropriation at the maximum legal rates provided by statute or the law.

See also Responses to Interrogatories 6, 7, 8, 15, and 16.

Dated: July 13, 2018 Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Darrell R. Atkinson, am a citizen of the United States and am employed in the County of San Francisco, State of California. I am over the age of 18 years and am not a party to the within action. My business address is Hosie Rice LLP, 600 Montgomery Street, 34th Floor, San Francisco, California, 94111.

On July 13, 2018, I served the following:

PLAINTIFF SPACE DATA CORPORATION'S JULY 13, 2018 AMENDED RESPONSES TO DEFENDANT GOOGLE LLC'S S INTERROGATORIES NOS. 12, 15, 16, 17, 19, 20 & 23

by email at San Francisco, California, addressed to the following parties:

Robert A. Van Nest
Christa M. Anderson
Matthew M. Werdegar
Eugene M. Paige
Matthias A. Kamber
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Attorneys for Defendants
Alphabet Inc. and Google LLC.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

DATED: July 13, 2018

/s/ Darrell R. Atkinson
Darrell R. Atkinson